САНКТ-ПЕТЕРБУРГСКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ
ИНФОРМАЦИОННЫХ ТЕХНОЛОГИЙ, МЕХАНИКИ И ОПТИКИ

ENGLISH FOR MASTERS

Санкт-Петербург
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МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ РОССИЙСКОЙ ФЕДЕРАЦИИ

САНКТ-ПЕТЕРБУРГСКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ ИНФОРМАЦИОННЫХ ТЕХНОЛОГИЙ, МЕХАНИКИ И ОПТИКИ

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Целью предлагаемого учебного пособия "English for Masters" является развитие навыков чтения и понимания оригинальных текстов по специальности, коммуникативных умений различных видов речевой деятельности, а также аннотирования и реферирования научной литературы, составления презентаций и устных докладов на английском языке. А также сборник содержит справочный материал, обучающий написанию и оформлению научных статей.

Учебное пособие состоит из пяти глав, каждая из которых включает несколько оригинальных текстов по специальности, а также комплекс речевых упражнений, образцы коммуникативных ситуаций диалогической и монологической речи, соответствующих принципам современной коммуникативной методики. В приложениях представлены наиболее употребительные сокращения, термины и словосочетания, характерные для англо-американской научно-технической литературы, и другая полезная информация.

При отборе текстов авторы стремились к тому, чтобы материал носил общенаучный характер и был насыщен лексикой, связанной с научной работой.

Данное учебное пособие предназначено для работы в группах магистров технических специальностей.

Рекомендовано к печати Советом Гуманитарного факультета, 18.05.2010 г.,
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В 2009 году Университет стал победителем многоэтапного конкурса, в результате которого определены 12 ведущих университетов России, которым присвоена категория «Национальный исследовательский университет». Министерством образования и науки Российской Федерации была утверждена Программа развития государственного образовательного учреждения высшего профессионального образования «Санкт-Петербургский государственный университет информационных технологий, механики и оптики» на 2009–2018 годы.

Contents

Part I

Texts for reading and discussion

(Tasks to be done in class)

Text 1

Exercise 1. Read and translate the following words and word combinations.

Pure and applied science, totally different activities, interconnection, to establish relationships, phenomena, the working laws of science, to carry out work, practical affairs, to confine attention to explanation, events.

Exercise 2. State the part of speech of the following words and determine their meaning without using a dictionary.

1. Apply, appliance, applicable, applicator, application.
2. Act, action, active, activity, actor, activist.
3. Differ, difference, different.
4. Connect, connector, connection, connective, connectivity.
5. Relate, relation, relationship, relative, relatively, relativity, relativism, relativist.
6. Practical, practically, practice, practitioner.

PURE AND APPLIED SCIENCE

As students of science you are probably sometimes puzzled by the terms "pure" and "applied" science. Are these two totally different activities, having little or no interconnection? Let us begin by examining what is done by each.

Pure science is primarily concerned with the development of theories (or, as they are frequently called, models) establishing relationships between the phenomena of the universe. When sufficiently validated these theories (hypotheses, models) become the working laws or principles of science. In carrying out this work, the pure scientist usually disregards its application to practical affairs, confining his attention to explanations of how and why events occur.

Comprehension check-up.

Task 1. Answer the following questions.

1. What definition of “pure science” does the author give?
2. When does a hypothesis become a principle of science?
3. What problems does the pure scientist deal with?
4. What is your own explanation of “pure science”?

Task 2. Match the synonyms.

1. total a) most important

2. different	b) often
3. frequently	c) complete
4. primary	d) possible
5. probable	e) various
	f) official
	g) evident

Task 3. Choose the correct word to complete the sentences.

1. You are probably sometimes … by the terms "pure" and "applied" science.
    a) impressed
    b) puzzled
    c) inspired
2. Let us begin by … what is done by each.
    a) operating
    b) confining
    c) examining
3. Pure science is primarily … the development of theories establishing relationships.
    a) concerned with
    b) explained by
    c) connected to
4. When sufficiently … these theories become the working laws of science.
    a) established
    b) validated
    c) completed
5. The pure scientist usually … its application to practical affairs.
    a) deals with
    b) works out
    c) disregards

Topics for discussion

1. What can you tell about pure and applied science? Do these two activities really have little or no interconnection?
2. When do different theories become working laws of science?
3. How do you understand the term "pure" scientist?

Text 2

Exercise 1. Read and translate the following words and word combinations.

Exact science, specialized natural science, to provide evidence, pure sense, functional relations, logical systems based on axioms, observations, general laws of matter, subatomic level, structural bonds.

Exercise 2. Make nouns from the following verbs according to the model and translate them.

Model: verb + -tion(-ation): inform – information.

Invent, locate, relate, operate, connect, specialize, generate, explore, observe.

MATHEMATIZATION OF NATURAL SCIENCES

Exact science in its generally accepted sense can be referred to as a family of specialized natural sciences, each of them providing evidence and information about different aspects of nature by somewhat different working methods. It follows that mathematics in its pure sense does not enter into this frame, its object of study being not nature itself. Being independent of all observations of the outside world, it attempts to build logical systems based on axioms. In other words, it concentrates on formulating the language of mathematical symbols and equations which may be applied to the functional relations found in nature.

This "mathematization", in the opinion of most specialists, is witnessed first in physics which deals with general laws of matter and energy on subatomic, atomic and molecular levels. Further application of these mathematical laws and studies is made by chemistry and results in structural bonds between the elements of matter being established.

Comprehension check-up

Task 1. Answer the following questions.

1. What is considered to be “exact science”?
2. How does the author describe “specialized natural sciences”?
3. What is the object of study in mathematics?
4. What laws does physics deal with?
5. What does the application of mathematical laws in chemistry result in?

Task 2. Match the antonyms.

1. general	a) artificial
2. different	b) dirty
3. exact	c) insignificant
4. natural	d) similar
5. pure	e) approximate
6. evident	f) valuable
	g) enormous
	h) vague

Task 3. Complete the sentences according to the information given in the text.

1. Exact science can be referred to as a family of … .
    a) applied sciences
    b) specialized natural sciences
    c) pure sciences
2. The object of study in mathematics is … .

a) not nature itself
b) nature itself
c) matter itself

3. Mathematics concentrates on formulating the language of … .
   a) functional relations
   b) different working methods
   c) mathematical symbols and equations
4. Physics deals with general laws of … .
   a) matter and energy
   b) structural bonds between elements
   c) logical systems
5. Further application of these studies results in … .
   a) different aspects of nature
   b) structural bonds between the elements of matter
   c) general laws of matter

Text 3

Exercise 1. Read and translate the following words and word combinations.

In advance, outcome, degree of confidence, degree of doubt, available, confirmability, refutability, reasonable alternative explanation, particular circumstances, to find special explanations, to make a difference.

Exercise 2. Pay special attention to the following prepositions after the given verbs (postpositions) and translate them. Make sentences of your own.

To lead to, to work in, to work on, to work out, to work at, to result in, to result from, to agree with, to agree to, to agree on (upon), to turn to, to turn on, to turn over.

Exercise 3. Make adjectives from the following verbs according to the model and translate them.

Model: verb + able: compare – comparable.

Reason, value, refute, confirm, avail, vary, note, change, recognize, control, convert.

EXPERIMENT AND THEORY

When we carry out an experiment, we do it because we don't know what the result will be. If we knew in advance we wouldn't bother. There must be two, or several, or a large number of possibilities. We may expect one of several outcomes, or we may not know at all what to expect.

For the experiment, whatever its purpose, to be considered a test of some theory, the outcome must make a difference. If the experiment has one result, we must be led to a greater degree of confidence in our theory, if it has another result we must be led to a greater degree of doubt. If the degree of our belief was unaffected by the result

the experiment cannot be said to have been a test, although it may have been valuable or interesting for other reasons.

For a theory to be part of science we must be able to imagine the possibility that some kind of evidence, if it were available, would lead us to make us doubt the theory. It has been said that for a theory to be scientific, it must be refutable.

Nobody needs to be told that theories should be confirmable, in the sense that new experiments must be able to increase our confidence in them - we all take it for granted. We do need to be reminded from time to time that we might be wrong, and should be open to evidence that might show it. Confirmability and refutability are two sides of a single coin. New facts should be able to change our degree of belief one way or another. Only if this is so is our belief scientific.

There are often reasonable alternative explanations why a good theory will fail in some particular circumstances, and even when there aren't, if we think the theory is better than any alternative available we will stick with it and try to find special explanations of why it didn't work in these circumstances.

Comprehension check-up

Task 1. Answer the following questions.

1. What are possible results of an experiment?
2. What is necessary for a theory to be scientific?
3. Give your own explanation to the statement that “theories should be confirmable”.
4. What can change our attitude to scientific theory?
5. Is it possible for a good theory to fail in some particular circumstances?

Task 2. Join the suitable parts.

1. When we carry out the experiment we may expect…	a) be confirmable.
2. We carry out the experiment because we don’t know…	b) be refutable.
3. If the experiment has one result, we must be led to…	c) be refutable.
4. Nobody needs to be told that theories should…	d) one of several outcomes.
5. For a theory to be scientific, it must …	e) what the result will be.

Task 3. Arrange the sentences in their logical order.

1. New experiments must be able to increase our confidence in them.
2. For a theory to be scientific, it must be refutable.
3. When we carry out an experiment, we may expect one of several outcomes.
4. There are often reasonable alternative explanations why a good theory will fail in some particular circumstances.
5. Confirmability and refutability are two sides of a single coin.

Task 4. Before reading the text discuss the following questions.

1). Do you have a mobile phone? How long have you had it?
2). What do you use it for? How often do you use it?
3). Is it an important part of everyday life in your country?

Task 5 . Match the words and phrases with their definitions.

1. stagnate v(stagnated)	a) to become or make smth become difficult to distinguish clearly
2. ubiquitous adj.(ubiquity)	b) skill in using your hands or your mind
3. taciturn adj.	c) seeming to be everywhere or in several places at the same time
4. dexterity n	d) tending not to say very much, in a way that seems unfriendly
5. blur v(blurring)	e) to stop developing or making process

Text 4

Exercise 1. Make nouns from the following verbs according to the model and translate them:

a) Model: to work - a work[er]
To research, hold, view, develop, improve, use, design, control, convert, emit.

b) Model: to reflect – a reflect[or]
To generate, calculate, compress, project, integrate, visit, demonstrate.

Much More than a Contact Lens

Part 1

Super contact lenses which display background information onto your real world view seem like a gadget taken from the latest Spielberg movie. Thanks to a recently developed technique, this scenario may soon be real.

A contact lens with integrated circuitry. A researcher of the University of Washington holds a contact lens which embeds LEDs and other electrical components and which is manufactured using their newly developed self-assembly technique.

Imagine you are visiting a small town for the first time. Suddenly, you bump into a monument and wonder what it is. Faster than the blink of an eye, the special contact lenses that you are wearing display the name of the monument with a short description directly retrieved from the web. Science fiction? Not for much longer. Contact lenses which look exactly like ordinary contact lenses, but with a LED display embedded, have been developed by researchers at the University of Washington (Seattle, USA) led by Babak Parviz.These super contact lenses could offer the perfect platform for Augmented Reality: an important branch of computer science where computer generated images are super-imposed onto the real world; a

technique which improves our perception of reality by allowing us to see interesting information that pops up as we look around. The effect is almost like having a sixth sense! Augmented Reality has recently started to become widely available thanks to new generation of mobile devices. Smart phones, which embed digital compasses and video cameras, are able to calculate where the user is pointing the device and overlay data onto a scene accordingly. This hardware was the missing link to finally offer Augmented Reality applications to a wide audience.

There is still a drawback though. Imagine if you walked around constantly looking at the real world through the screen of your mobile phone, your hands would always be busy holding the phone out in front of you and, in all truthfulness, you would look most peculiar. This is when the new contact lens, developed in Washington, comes into play. "An image projection system based on contact lenses offers an interesting platform for augmented reality," confirms J. Webster Stayman at Michigan Tech Research Institute (Michigan, USA), who has years of experience in the design of imaging systems. We could think about overlaying all kinds of images onto a scene: annotations, metrics, and virtual objects. Moreover, since different images can be placed in either eye, it is also possible to do depth encoding for 3D objects, making the displayed virtual objects appear even more real. "All of this," adds Stayman, "can potentially be accomplished in a relatively small unobtrusive package that is already familiar to millions of people, such as a contact lens."

The new technique developed by the researchers at the University of Washington allows to place circuitry, including light emitting diodes (LEDs), onto contact lenses. "We are working on converting conventional contact lenses into functional displays," Parviz explains. "On this behalf, we have just demonstrated powering and controlling light sources on the contact lens through a wireless link."

Notes:

- self-assembly - самосборка
- embed - вставлять, врезать, вделывать
- super-impose (on) - накладывать (одно на другое)
- perception - восприятие, ощущение
- drawback - препятствие; помеха, преграда, препона

Task 1. Finish the sentences according to the text:

1. Super contact lenses look like ordinary contact lenses, but …
2. These contact lenses can offer…
3. Now researchers are working on …

Task 2. Find synonyms for the following verbs:

Accomplish, wonder, retrieve, offer, generate, impose, allow, explain.

Task 3. Find in the text the expressions that mean:

- meet somebody/something unexpectedly
- fix (an object) firmly and deeply in a surrounding mass
- a feature that renders something less acceptable; a disadvantage or problem

- having been made greater in size or value
- to start functioning
- appear in a place or situation unexpectedly

Task 4. Explain the following in your own words.

Gadget, science fiction, LED display, 3D object.

Task 5. Fill in the blanks with suitable preposition (in front of, by, at, on, of, in, with, for, through).

1. Imagine if you walked around constantly looking …the real world …the screen … your mobile phone, your hands would always be busy holding the phone out … you and, in all truthfulness, you would look most peculiar.
2. Contact lenses which look exactly like ordinary contact lenses, but … a LED display embedded, have been developed … researchers … the University … Washington led … Babak Parviz.
3. "An image projection system based … contact lenses offers an interesting platform … augmented reality," confirms J. Webster Stayman … Michigan Tech Research Institute, who has years … experience … the design … imaging systems.

Text 4

Exercise 1. Make the adverbs from the following adjectives according to the model and translate them:

Model: extreme – extreme[ly]

Final, similar, like, important, selective, literal, constant, potential, complete, entire, permanent, high, virtual, useful.

Exercise 2. Make collocations for the following words.

Model: background information

Components, manufacturing, self-assembly, micron-scale, process.

Much More than a Contact Lens

Part 2

Biocompatibility tests. Contact lenses with electronic components were safely worn by rabbits for up to 20 minutes in laboratory tests.

The new manufacturing process is based on a self-assembly technology, which allows electrical micron-scale components to lock onto their predestined locations on the contact lens without explicit human intervention. "This process does not require individual mechanical placement of the elements on a substrate. A process that, otherwise, would be extremely difficult and time consuming given the very small size of the electronic components," comments Stayman. The microelectronics industry is already capable of producing all kinds of micron-scale electronic subsystems, such as antennas, wireless data transmitters/receivers, display control circuits, optoelectronic display pixels, biosensors, etc. But the real challenge in this case was to integrate all

of these into a functional system on the top of an unconventional substrate, such as the polymer that a contact lens is made from.

The production of such contact lenses involves three main steps. First, a plastic template is created as a mould for micron sized metal contacts: this mould, on which the metal contacts are then coated, is created by digging guidelines into a plastic (PET) sheet using a photolithography process. Then the self-assembly step is quite simple: the plastic template is dipped into a special solution with some microelectronics components; thanks to capillary forces, the components then bind with the plastic templates in the desired location. Finally, the surface is encapsulated with a biocompatible material and pressed using a heated aluminum mould which imparts a permanent curvature on it, creating the contact lens. In the near future, then, should we expect to be able to wear a super contact lens wirelessly coupled with our mobile phone, similarly to a Bluetooth headset? Well, there are still a number of challenges to overcome before this scenario becomes reality.

First of all, a high resolution display still needs to be embedded in the contact lens. This new technique is suitable for this purpose but "we are still at the beginning of this path," admits Parviz, "even if our manufacturing technique in principle allows for integration of a large number of pixels." There are also other technical issues to solve; most importantly, such contact lenses are likely to be restricted to display just transparent overlaying images. The reason is that we still cannot selectively block light from the scene to create an opaque overlay. As Stayman explains, "the lens is located, quite literally, at the pupil plane of the imaging system and overlaying images so close to the center of the eye would only change the optical response — i.e. blurring of the scene," like having a micro-spotlight just in front of your eye! So will it ever be possible to show opaque images on the contact lens? Stayman believes that "we could control the transparency of the entire contact lens," modifying the contrast between the overlaying image and the real world. Almost like turning down the lights a little bit. This would allow our eye to better distinguish the virtual objects displayed on the lens, switching the focus from the real scene on the background to the virtual annotation on the foreground.

Finally, the most intriguing challenge is to understand how to deal with the constant movements of our eyes. "When we look at something we are constantly scanning the scene for content, with our eyes darting from area to area; this is because we use the fovea — the high resolution portion of our retina — for close inspection of scene content," says Stayman. "The contact lens will move with the eye. Thus to keep a virtual object or annotation fixed within a scene, the image displayed on the contact lens must be moved in a direction to compensate for the eyes motions. This would require some form of eye tracking device — potentially also in the contact lens itself. Such a tracking system would need to be quite fast and accurate for virtual objects to appear stationary." Considering these and other issues, it is still not completely clear how these contact lenses will be converted into fully working devices able to provide a good platform for Augmented Reality. Thanks to Parviz and his collaborators' work, nonetheless, the day when we can simply blink and see all kinds of useful information popping up in front of our eyes might not be so far away.

Notes:

- biocompatibility - биосовместимость
- predestine - предназначать, предопределять
- explicit - ясный, подробный; подробно разработанный высказанный до конца; явный; определённый, точный
- distinguish - 1) различить; разглядеть, рассмотреть 2) проводить различие, находить отличия; различать, распознавать
- mould - лекало, образец, трафарет, (литейная) форма
- template - лекало, образец, трафарет, шаблон
- curvature - выгиб, изгиб, искривление, кривизна
- transparent - прозрачный, просвечивающий
- opaque - непрозрачный; непроницаемый, тёмный
- pupil -зрачок
- fovea – углубление, впадина.

Task 1. Check up for comprehension.

1. What is “self-assembly technology”?
2. What main steps does the production of the lens involve?
3. How can the problem of the constant movement of our eyes be solved?
4. What problem is described in the paragraph started with “First of all…”? What solution is offered?

Task 2. Find synonyms for the following adjectives.

Intriguing, simple, explicit, difficult, main, constant, permanent.

Task 3. Match two halves of the expressions bellow and give a Russian equivalent.

1. Predestined	a. system
2. Unconventional	b. technique
3. time	c. coupled
4. laboratory	d. substrate
5. digging	e. consuming
6. wirelessly	f. guideline
7. manufacturing	g. response
8. optical	h. test
9. tracking	i. location

Task 4. Choose the right continuation for each sentence.

1. Such contact lenses are likely ...
    a) restrict to display just transparent overlaying images.
    b) to be restricted to display just transparent overlaying images.
    c) to restrict to display just transparent overlaying images.
2. Should we expect to be able …
    a) wear a super contact lens wirelessly coupled with our mobile phone, similarly to a Bluetooth headset?
    b) to be worn a super contact lens wirelessly coupled with our mobile phone, similarly to a Bluetooth headset?
    c) to wear a super contact lens wirelessly coupled with our mobile phone, similarly to a Bluetooth headset?
3. The image displayed on the contact lens must...
    a) be moved in a direction to compensate for the eyes motions.
    b) to be moved in a direction to compensate for the eyes motions.
    c) moved in a direction to compensate for the eyes motions.
4. The day when we can simply blink and see all kinds of useful information popping up in front of our eyes might …
    a) be not so far away.
    b) not to be so far away.
    c) not be so far away.

Text 5

Exercise 1. Make adjectives from the following nouns according to the model and translate them.

Model: beauty – beauty [ful]

Use, help, color, doubt, truth, success, power.

Exercise 2. Make adverbs from the following adjectives according to the model and translate them.

Model: quick – quick [ly]

Immediate, actual, initial, untiring, rapid.

WHAT A MOLECULAR TRANSISTOR!

Part 1

How far can a single, tiny molecule go? Exceeding most people's imagination, researchers have shown that a single molecule can actually work as a transistor for photons.

What is the major technological breakthrough of the 20th century? According to the U.S. National Academy of Engineering's top 20 list, electronics, computers, lasers and optical communications are all good candidates. Which is the common denominator amongst them all? The transistor, of course; invented in 1925, the

transistor heralded a new era in technology. Our world would not be the same without it. Vahid Sandoghdar and his Nano-optics group of researchers at the Swiss Federal Institute of Technology (ETH) in Zurich have now shown that a single molecule can actually perform on photons all the operations that a standard transistor can perform on electrons — a huge step forward towards all-optical computation. Where does the advantage of using photons instead of electrons lie? Light is fast, faster than anything else. Light is already the standard tool for telecommunications: optical fibers have been steadily substituting old copper cables with overwhelming advantages in terms of performance. Nonetheless, computation is still mainly performed by electrons in electronic devices. The use of photons instead could speed things up, and cutting-edge research is already exploring various optical alternatives to electronics, including those based on metamaterials or excitons.

The transistor is the fundamental building block of almost all electronic equipment today. Transistors are used to control the flow of electrons in electrical signals. A low-intensity electrical power is able to make the transistor function as a gate that controls another incoming electrical signal of greater intensity, in the same way that a valve controls water flow from a tap. When the first signal reaches a certain threshold, the gate opens and lets the incoming electrical flow from the larger power supply go through. Below that threshold, the gate closes. The job of the transistor is, therefore, to amplify or attenuate an incoming electrical signal depending on a controlling, lower-intensity current. Another way of seeing transistors is as a binary switch: for example, an open gate can be encoded as a digital 1 and a closed gate as a digital 0. Transistors are a key component in electronic devices such as computers because they can be arranged into networks and perform all kinds of binary operations.

Nonetheless, "these basic operations... when performed with electrons, present limitations, such as losses, heating, and cross-talks between electrons. It would be interesting if the same operations could be performed using light," says Sandoghdar. The main advantage of light is that it is faster than anything else, and using photons instead of electrons could greatly speed things up. "This opens new difficulties, though. Controlling light by using light is not possible, since photons do not interact between themselves."

Sandoghdar and his team at ETH have overcome this challenge by using single molecules to mediate interactions between photons. Molecules can thus emit light in a process called stimulated emission: when bombarded with photons of the correct energy, electrons within a molecule can reach an excitation state and then come back to normal by releasing new, identical photons. However, "stimulated emission in molecules is usually an inefficient process. By going to low temperature in order to increase the molecular cross-section and by focusing light to diffraction limit, we achieved the higher efficiency needed to perform our experiment," Sandoghdar says.

Notes:

- breakthrough - достижение, успех, открытие
- denominator - общий знаменатель, сходные характеристики
- herald - возвещать; извещать, объявлять, предрекать, предсказывать

- substitute - заменять, использовать вместо чего-л.
- overwhelming - огромный; несметный
- valve - клапан; вентиль; золотник; затвор; створка
- threshold - порог, пороговая величина
- tap - затычка, пробка, втулка, кран
- exciton – экситон

Task 1. Match the beginning of the sentences with their endings.

1. The transistor, invented in 1925,	a) to control the flow of electrons in electrical signals.
2. Transistors are used	b) the fundamental building block of almost all electronic equipment today.
3. The transistor is	c) heralded a new era in technology.
4. Another way of seeing transistors is	d) to amplify or attenuate an incoming electrical signal depending on a controlling, lower-intensity current.
5. The job of the transistor is, therefore,	e) as a binary switch: for example, an open gate can be encoded as a digital 1 and a closed gate as a digital 0.

Task 2. Explain in your own words "electron transistor operation".

Task 3. Find the antonyms for the following adjectives:

Major, common, single, actual, fast, low, difficult, correct, efficient.

Task4. Find in the text the expression or the word that means:

- began to move or travel faster;
- modern;
- unwanted transfer of signals between communication channels;
- dramatic and important discovery or development.

Task 5. Fill in the blanks with suitable articles, if necessary:

1. … low-intensity electrical power is able to make … transistor function as … gate that controls another incoming electrical signal of … greater intensity, in … same way that … valve controls … water flow from … tap. When … first

signal reaches … certain threshold, … gate opens and lets … incoming electrical flow from … larger power supply go through.

2. … job of … transistor is, therefore, to amplify or attenuate … incoming electrical signal depending on … controlling, lower-intensity current.
3. … molecules can thus emit … light in … process called … stimulated emission: when bombarded with … photons of … correct energy, … electrons within … molecule can reach … excitation state and then come back to normal by releasing new, … identical photons.

Text 5

Exercise 1. Make adjectives with negative meaning using prefixes (un-, in-, im-, dis, non-) from the given ones and translate them:

Efficient, limit, appropriate, possible, altered, usual, important, useful, real, like, clear, known, exceptional.

Exercise 2. Fill to or with, them make sentences.

Accustomed … sth, acquainted …sb/sth, bear…sb, coincide… sth, differ … sb (=disagree), engaged … sb, friendly… a cause, patient…sb, unequal…sth.

Part 2

What is "an appropriate medium"? Molecules can emit light through a process called stimulated emission — the same working principle of lasers: an electron, after being perturbed by a photon with the proper energy, emits a second photon with the same phase, frequency, polarization, and direction of travel as the original. However, obtaining stimulated emission from a molecule with good efficiency, "is tricky from the experimental point of view," Sandoghdar points out. "In fact, stimulated emission in molecules is usually an inefficient process, because light is not strongly focused and single molecules do not have a broad cross-section. By going to low temperature in order to increase the molecular cross-section and by focusing light to diffraction limit, we achieved the higher efficiency needed to perform our experiment." In order to show the single molecule optical transistor at work, two laser sources are needed. The first laser pumps the electrons of the molecule in an appropriate energy state; a second laser sources then stimulates the secondary emission of photons from the molecule. In these terms, the first laser works like the control current in a transistor. It can, therefore, decide when to open or to close the molecular gate, i.e. when the molecule only absorbs the photons of the second laser or when it emits more by stimulated emission. "Three actions are, therefore, possible on the second beam, i.e. to attenuate it up to ten percent, leave it unaltered or amplify it up to one percent." Even though this efficiency might sound very low, Diederik S. Wiersma, leading the group of Optics of Complex Systems at LENS (European Laboratory for Non-linear Spectroscopy in Florence, Italy), explains that "you need to compare this result to other non-linear effects where usually not more than one photon out of a million is affected. The efficiency achieved in this work is incredibly high since you can control nearly all the photons of a light beam this way."

The ETH researchers think there is a long way to go before identifying any practical applications for their findings. For example, "it is not clear to me," Sandoghdar admits, "how wiring at the nanoscale could be achieved in order to make such optical transistors communicate between them. The low temperature, fundamental in our experiment, is another issue for real applications and, moreover, a higher efficiency will be needed; maybe atoms will work better than what molecules do. Right now, academic applications are for sure easier to tackle for this system, such as, for example, exploring quantum information schemes. It is amazing though," he adds "to see what a small element, like a single molecule, can do in terms of light absorption and amplification."

There is still a lot to do in these days in nanophotonics before electronics will be substituted by all-optical circuits, but, as Wiersma says, "this result is a really important step forward. It might be that, one day, we could use these single-molecule optical transistors as building blocks for creating fully optical circuits, which, of course, would be fantastic." When the first electronic transistor was developed it was huge and it seemed impossible that a centimeter size object would ever be scaled down and become as useful as it is today. The same holds for the first laser which filled an entire room and was considered completely useless in the early days. What followed is history: transistors are the heart of modern electronics, and lasers are used for surgery, CD players, bar code scanners, and much more. "Application driven research," Wiersma concludes, "will never provide real scientific progress and, vice versa, it is impossible to know all the applications that can come out of an important scientific result. Do not forget, therefore, to look also at the sheer beauty of the result as such: these researchers managed to block and control a beam of light with one single molecule, which is a really exceptional achievement!"

Notes:

- perturb - возмущать, приводить в смятение; тревожить; нарушать
- obtain - получать; добывать; приобретать
- cross-section - поперечное сечение,
- tackle - биться (над какой-л. задачей) , пытаться найти решение (каких-л. вопросов)
- amplification - увеличение; подъём, прирост, расширение
- attenuate - ослаблять; смягчать
- sheer - абсолютный, полнейший, сущий, явный

Task 1. Choose the true sentence from two similar ones.

1. a) Molecules can emit light through a process called stimulated emission — the same working principle of lasers: an electron, after being perturbed by a photon with the proper energy, emits a second photon with the same phase, frequency, polarization, and direction of travel as the original.

b) Molecules can emit light through a process called stimulated emission — the same working principle of lasers: a photon, after being perturbed by an electron with the

proper energy, emits a second photon with the same phase, frequency, polarization, and direction of travel as the original.
2. a) In order to show the single molecule optical transistor at work we need a laser.
b) In order to show the single molecule optical transistor at work, two laser sources are needed.
3. a) The first laser pumps the electrons of the molecule in an appropriate energy state; a second laser sources then stimulates the secondary emission of photons from the molecule.
b) The first laser pumps the electrons of the molecule in an appropriate energy state; these electrons stimulate the secondary emission of photons from the molecule.
4. a) In these terms, the first laser works like the control current in a transistor. It can, therefore, decide when to open or to close the molecular gate, i.e. when the molecule only absorbs the photons of the second laser or when it emits more by stimulated emission.
b) In these terms, the second laser works like the control current in a transistor. It can, therefore, decide when to open or to close the molecular gate, i.e. when the molecule only absorbs the photons of the second laser or when it emits more by stimulated emission.
5. a) It can, therefore, decide when to open or to close the molecular gate, i.e. when the molecule only absorbs the photons of the second laser or when it emits more by stimulated emission.
b) It can, therefore, decide when to block the molecular gate, i.e. when the molecule only absorbs the photons of the second laser or when it emits more by stimulated emission.

Task 2. Explain in your own words "molecular transistor operation".

Task 3. Find synonyms for the following nouns:
State, result, system, circuit, application.

Task 4. Put the verbs in brackets into the correct form using the Passive Voice.

1. In order to show the single molecule optical transistor at work, two laser sources (need).
2. An electron, after (perturb) by a photon with the proper energy, emits a second photon with the same phase, frequency, polarization, and direction of travel as the original.
3. It is not clear how wiring at the nanoscale could (achieve) in order to make such optical transistors communicate between them.
4. As this work shows, there is still a lot to do in these days in nanophotonics before electronics (substitute) by all-optical circuits.
5. The same holds for the first laser which filled an entire room and (consider) completely useless in the early days.
6. When the first electronic transistor (develop) it was huge and it seemed impossible that a centimeter size object ever (scale) down and become as useful as it is today.
7. What followed is history: transistors are the heart of modern electronics, and lasers (use) for surgery, CD players, bar code scanners, and much more.

Task 5. Use the most suitable linking word (however, even though, moreover, therefore, in fact, i.e.) for each gap.

1. ..., obtaining stimulated emission from a molecule with good efficiency, "is tricky from the experimental point of view," Sandoghdar points out.
2. … this efficiency might sound very low, Diederik S. Wiersma, leading the group of Optics of Complex Systems at LENS, explains that "you need to compare this result to other non-linear effects where usually not more than one photon out of a million is affected".
3. The low temperature, fundamental in our experiment, is another issue for real applications and, …, a higher efficiency will be needed; may be atoms will work better than what molecules do.
4. Do not forget, ..., to look also at the shear beauty of the result as such: these researchers managed to block and control a beam of light with one single molecule, which is a really exceptional achievement!
5. ..., stimulated emission in molecules is usually an inefficient process, because light is not strongly focused and single molecules do not have a broad cross-section.
6. It can, …, decide when to open or to close the molecular gate, … when the molecule only absorbs the photons of the second laser or when it emits more by stimulated emission.

Text 6

Exercise 1. Make adjectives from the following nouns according to the model.

Model: Electron – electron [ic]

Ion, atom, atmosphere, optimist, base, strategy, anarchy.

Exercise 2. Match a word from left column with a word from right column to make compound adjectives (make as much combinations as possible) and translate them.

1. well	a. moving
2. slow	b. informed
3. hand	c. educated
4. broad	d. consuming
5. time	e. known
6. wealthy	f. made
7. good	g. behaved
	h. looking
	i. bred
	j. minded

THE MIND MACHINE?

Although intelligence has been studied, and the brain has been studied, there is little understanding of how the brain works to produce intelligence. This has something to do with the fact that the brain contains around 100 billion cells (about the number of stars in the Milky Way).

One of the continuing myths about the relationship between intelligence and the brain is that the brains of very clever people are, somehow physically different from those of ordinary people. At the beginning of the century an American scientist called E A Spitzka produced a list of the weights of the brains of important, well-known men. The heaviest brain on the list was that of Turgenev, the Russian novelist, at 2000g. However, the brain of another great genius, Walt Whitman, weighed only 1282g.

There are no significant differences between the intelligence levels of males and females. However, girls under seven score a little higher than boys in IQ tests and the highest IQ recorded is that of Marylin vos'Savant at 230. However, men and women do differ in the way they think. Generally, women are more skilled verbally and men do better on visual-spatial tasks.

Interestingly, the fibres which join the two halves of the brain have been found to be larger in women than in men. This supports the theory that women can change from .'practical' to 'emotional' thinking more quickly than men.

People with mental problems have often been treated extremely badly. Two hundred years ago, the mentally ill were swung around in revolving chairs, or holes were drilled in their skulls to release evil spirits. From the 1930s, the mentally ill were subjected to electric shock .therapy and lobotomy - the removal of part of their brain. In the 1960s and 70s, thousands of people were given drugs to cope with anxiety and then became addicted to them.

The brain needs ten times as much blood as other organs of the body, as it can't store glucose for later use. This is different to muscles and other organs and although the adult brain makes up only two per cent of the body weight, its oxygen consumption is twenty per cent of the body's total.

There are similarities between brains and computers. Computers can do complicated calculations at incredible speeds. But they work in a fixed way, because they can't make memory associations. If we need a screwdriver and there isn't one, we

will think laterally and use a knife or coin instead. Computers can't do this. In fact, it is claimed that when it comes to seeing, moving and reacting to stimuli, no computer can compete with even the brain power of a fly.

Most of our mental processes are deeply formed habits. Challenging your brain to do things differently helps it develop. Try changing routines as often as you can: take a bus instead of going by car, sit in a different chair. An extreme but useful exercise is to read something upside down - you can actually feel your brain at work.

Exercise more. Good health and fitness levels give you overall improved energy which leads to better concentration.

Cooking is a good all-round mental exercise. It needs mathematical, organizational and scientific skills as well as challenging memory and creative ability. Use recipes at first and then learn to guess amounts, combinations reactions of ingredients and timing. Do puzzles and play games. Teach yourself to work out codes and expand your vocabulary at the same time.

Notes:

- visual-spatial – пространственное (мышление)
- screwdriver – отвертка
- removal - устранение, удаление; ликвидация; исключение
- cope (with) - справиться; выдержать, совладать
- anxiety - беспокойство, тревога, боязнь, страх
- compete - состязаться, соревноваться, конкурировать; соперничать

Task 1. Can you say "intelligent person" about someone who

- is good at passing exams?
- is imaginative?
- gets what she/he wants in life?
- understands new ideas quickly?
- has a good memory?
- deals with people well?
- is sensible?
- reads a lot?
- is good at crosswords?

Task 2. Give the explanation for the following words.

Brain, myth, IQ, addicted, mental, skull, glucose.

Task 3. Write comparative and superlative forms of the following adjectives.

Heavy, high, skilled, good, large, quick, many.

Task 4. Topics for discussion:

- What do you mean by "intelligence"?
- How can we improve our brain power?
- What do you think if IQ reflects real intelligence?

- What was new for you in the article?

Text 7

Exercise 1. Read and translate the words paying attention to the meaning of the prefix "semi".

Semiconductor, semiconductive, semiautomatic, semicircle, semifinal, semiperiod, semisymmetric, semi-transparent, semi-reflecting.

Read the text and put the paragraphs in the right order. (The first and the last ones are in the correct place.)

HOW THE INTERNET BECAME A BIG BOY

Part 1

1. In the summer of 1968, experts at the RAND Corporation, America's foremost Cold War think tank, were considering a strange strategic problem. How could the US authorities successfully communicate after a nuclear war? No matter how thoroughly a network was armoured or protected, its switches and wiring would always be vulnerable to bombs. An attack could reduce any conceivable network to tatters.

2. The invention of the mailing list followed naturally. This was an ARPANET broadcasting technique in which an identical message could be sent automatically to large numbers of network subscribers. Interestingly, one of the first really big mailing lists was "SF-LOVERS," for science fiction fans. Discussing science fiction, on the network was not work-related and was frowned upon by many ARPANET computer administrators, but this didn't stop it from happening.

3. By the second year of operation, however, an odd fact became clear. ARPANET's users had warped the computer-sharing network into a dedicated, high-speed, federally subsidised electronic postal service. The main traffic was not long-distance computing, but news and personal messages.

4. And how would the network itself be commanded and controlled? Any central authority would be an obvious and immediate target for an enemy missile. RAND mulled over this grim puzzle in deep military secrecy, and arrived at a daring solution. In the first place, they would design a network with no central authority. Furthermore, they would design it to operate while in tatters.

5. This excited and intrigued many, because it did sound like a theory for an indestructible network. In the autumn of 1969, the first node was installed in UCLA. By December 1969, there were four nodes on the infant network, which was named ARPANET, after its Pentagon sponsor (the Advanced Research Projects Agency). An added bonus was that scientists and researchers could share one another's computer facilities from a great distance away. This was a very handy service, for computer time was precious in the early '70s. In 1971 there were fifteen nodes in ARPANET; by 1972, thirty-seven nodes. And it was good.

6. The principles were simple. All the nodes in the network would be equal in status, each with its own authority to originate, pass and receive messages. The messages themselves would be divided into packets. Each packet would begin at some

specified source node, and end at some other specified destination node. It would wind its way through the network on an individual basis. The route that the packet took would be unimportant. Only reaching its final destination would count. Basically, the packet would be tossed like a hot potato from node to node, until it ended up in the proper place. If big pieces of the network had been blown away, that simply wouldn't matter.

7. The ARPA's original software for communication was known as NCP, 'Network Control Protocol', but as time passed and the technique advanced, NCP was superceded by a higher-level, more sophisticated standard known as TCP/IP. This software converted messages into streams of packets at the source, then reassembled them back into messages at the destination.

Notes:

- vulnerable - уязвимый; ранимый
- thoroughly - полностью, вполне, тщательно
- tatters - клочья, лохмотья
- missile - реактивный снаряд; ракета
- broadcasting - радиовещание, трансляция; радиопередача
- grim - жестокий, беспощадный, грозный, зловещий, мрачный, страшный
- supercede - заменять; замещать, смещать
- frown - смотреть неодобрительно
- wrap - завёртывать, сворачивать, складывать, закутывать
- mull (over) - обдумывать, размышлять
- conceivable - мыслимый, постижимый; возможный, потенциальный
- toss - бросать, кидать

Task 1. Find and write down the words or expressions that mean.

- a point in a network or diagram at which lines or pathways intersect or branch
- that people disapprove something
- the power or right to give orders, make decisions, and enforce obedience
- what you think about something for a long time before deciding what to do
- to throw (something) somewhere lightly or casually
- someone who enjoys a particular activity very much and spends a lot of time doing it

Task 2. Find synonyms for the following nouns.

Target, puzzle, invention, expert, source, facilities, stream, route, piece.

Task 3. Choose the correct preposition (in, by, until, of, from, to) for each gap.

1. … the autumn … 1969, the first node was installed in UCLA.
2. … December 1969, there were four nodes on the infant network, which was named ARPANET, after its Pentagon sponsor.

3. This was a very handy service, for computer time was precious … the early '70s.
4. … 1971 there were fifteen nodes in ARPANET; … 1972, thirty-seven nodes.
5. … the second year of operation, however, an odd fact became clear.
6. The number of "host" machines with direct connection to TCP/IP doubled every year … 1988 … 1997.
7. ARPANET itself remained fairly tightly controlled, at least … 1983, when its military segment broke off and became MILNET.

Text 7

Exercise 1. Fine synonyms for the following phrasal verbs.

Break off, break up, link up, get on, get into, move out, move in, barge in.

Exercise 2. Make nouns form the following verbs using suffix (-th, -ance, -tion, –ment, –age) and translate them.

Grow, resemble, predict, develop, operate, improve, direct, communicate, constellate, achieve, centralize, know, advance.

HOW THE INTERNET BECAME A BIG BOY

Part 2

As early as 1977, TCP/IP was being used by other networks to link to ARPANET. ARPANET itself remained fairly tightly controlled, at least until 1983, when its military segment broke off and became MILNET. But TCP/IP linked everyone to everyone else. And ARPANET itself, though it was growing, became a smaller and smaller neighbourhood amid the vastly growing constellation of other linked machines.

As the 70s and 80s advanced, other entire networks fell into the digital embrace of this ever-growing web of computers. Since TCP/IP was public domain, and the basic technology was decentralised and rather anarchic by its very nature, it was difficult to stop people from barging in and linking up. In fact, nobody really wanted to stop them from joining this branching complex of networks, which came to be known as "the Internet".

In 1984 the National Science Foundation got into the act. The new NSFNET set a blistering pace for technical advancement, linking newer, faster, shinier supercomputers, through thicker faster links, upgraded and expanded, again and again, in 1986, 1988 and 1990. And other government agencies leapt in: NASA, the National Institutes of Health, the Department of Energy, each of them maintaining

their own digital kingdom in the Internet confederation. A mere twenty years had passed since the invention of the ARPANET, but few people remembered it now.

For it had become a happy victim of its own overwhelming success. Its users scarcely noticed, for ARPANET'S functions not only continued but steadily improved. The use of TCP/IP standards for computer networking is now global. In 1971, there were only a handful of nodes in the ARPANET network. Today there are hundreds of thousands of nodes, scattered over virtually every country in the world. Five hundred million people use this gigantic mother of all computer networks.

The Internet's pace of growth in the early 1990s was spectacularly ferocious, at some point achieving a monthly growth of 20%. The number of "host" machines with direct connection to TCP/IP doubled every year from 1988 to 1997. The Internet moved out of its original base in military and research institutions, into elementary and high schools, as well as into public libraries and the commercial sector and, of course, into millions of homes.

Why did so many people want to be on the Internet? One of the main reasons was simply freedom. The Internet is a rare example of a truly, modern, functional anarchy. There is no 'Internet Inc.' There are no official censors, no bosses, no board of directors, no stockholders. This virtual freedom, many hold, was the major reason why this form of communication attracted so many users so quickly.

And so the story goes. The real Internet of the future may bear very little resemblance to today's, or even today's predictions. Predictions have never seemed to have much to do with the seething, development of the Internet. After all, today's Internet, bears little resemblance to those original grim plans for RAND's post-holocaust command grid. It's a fine and happy irony.

Notes:

- amid - между, посреди, среди
- thicker – зуммер
- seethe - бурлить, кипеть
- grid - решётка, сетка; модулятор; энергетическая система
- scatter - разбрасывать, рассыпать, раскидывать; расшвыривать
- constellation – плеяда
- blistering - быстрый, скорый, стремительный
- victim – жертва
- overwhelming - огромный; несметный
- ferocious - дикий; жестокий, беспощадный, свирепый
- resemblance -похожесть, сходство, схожесть
- prediction - предсказание; прогноз; пророчество

Task 1. True or false? Find phrases in the text to support your point of view.

1) Internet was invented in the course of the Cold War.

2) The first network was created in the United States in collaboration with French and Japanese intelligence agencies.

3) Internet coverage area is comparable with the world surface.
4) The Internet was developing especially quickly in the last decade of XXth century.
5) TCP/IP is a protocol protected by copyright.
6) The article states the freedom of expressing ideas and sharing information to be the most attractive advantage of the Internet.
7) Microsoft controls more than a quarter of stock of Internet, Inc.
8) The future of the Internet can be easily predicted.

Task 2. Topics for discussion:

1. What are the main steps in the Internet history?
2. According to the last paragraph, what can we expect from the Internet of tomorrow?
3. What is the Internet for you?

Text 8

Exercise 1. Which of these words can be used as a noun and as a verb in sentences? Translate both forms.

Inventory, progress, text, think, advertise, require, check, research, drive, fill, reflect, score, response, e-mail, task, report, monitor, extent.

Exercise 2. Match the synonyms.

1. Reveal	a. Suggest
2. Increase	b. Verify
3. Use	c. Augment
4. Check	d. Collate
5. Compare	e. Show
6. Rate	f. Evaluate
	g. Expand
	h. Implement

PORTRAIT OF A MULTITASKING MIND

What happens when you try to do three things at once?

Part 1

Are you a media multitasker? We know you're reading the article, but what else are you doing right now? Take a quick inventory: Are you also listening to music? Monitoring the progress of a sports game on TV? Emailing your co-worker? Texting your friend? If your inventory has revealed a multitasking lifestyle, you are not alone. Media multitasking is increasingly common, to the extent that some have dubbed today’s teens "Generation M."

People often think of the ability to multitask as a positive attribute, to the degree that they will proudly tout their ability to multitask. Likewise it's not uncommon to see job advertisements that place "ability to multitask" at the top of their list of required abilities. Technologies such as smartphones cater to this idea that we can (and should) maximize our efficiency by getting things done in parallel with each other. Why aren't *you* paying your bills and checking traffic while you're driving and talking on the phone with your mother? However, new research by EyalOphir, Clifford Nass, and Anthony D. Wagner at Stanford University suggests that people who multitask suffer from a problem: weaker self-control ability.

The researchers asked hundreds of college students fill out a survey on their use of 12 different types of media. Students reported not only the number of hours per week that they used each type of media, but also rated how often they used each type of media simultaneously with each other type of media. The researchers created a score for each person that reflected how much their lifestyle incorporated media-multitasking.

They then recruited people who had scores that were extremely high or low and asked them perform a series of tests designed to measure the ability to control one's attention, one's responses, and the contents of one's memory. They found that the high- and low- media-multitasking groups were equally able to control their responses, but that the heavy media-multitasking group had difficulties, compared to the low media-multitasking group, when asked to ignore information that was in the environment or in their recent memory. They also had greater trouble relative to their counterparts when asked to switch rapidly between two different tasks. This last finding was surprising, because psychologists know that multitasking involves switching rapidly between tasks rather than actually performing multiple tasks simultaneously.

It seems that chronic media-multitaskers are more susceptible to distractions. In contrast, people who do not usually engage in media-multitasking showed a greater ability to focus on important information. According to the researchers, this reflects two fundamentally different strategies of information processing. Those who engage in media-multitasking more frequently are "breadth-biased," preferring to explore any available information rather than restrict themselves, they develop a habit of treating all information equally. On the other extreme are those who avoid breadth in favor of information that is relevant to an immediate goal.

Notes:

- multitasking - многозадачность, многозадачная работа, многозадачный режим
- cater for / to - удовлетворять (требования) ; угождать, потворствовать (чьим-л. прихотям)
- counterpart - коллега, человек, находящийся на аналогичной должности или выполняющий сходную работу
- tout [taut] - назойливо расхваливать, рекламировать, навязывать

Task 1. Choose the correct item.

1. Technologies *such/like* as smartphones cater to *this/these* idea that we can maximize our efficiency by getting things done in parallel with each *another/other*.
2. Media multitasking is increasingly common, to the extent that *any/some* have dubbed today's teens "Generation M."
3. Students reported not *just/only* the number of hours per week that they used *each/every* type of media, but *too/also* rated how often they used *each/every* type of media simultaneously with *each/every* other type of media.
4. This last finding was surprising, because psychologists know *what/that* multitasking involves switching rapidly between tasks rather *then/than* actually performing multiple tasks simultaneously.
5. Those/these who engage in media-multitasking *more/most* frequently are "breadth-biased," preferring to explore *any/every* available information rather *than/that* restrict themselves.

Task 2.Use the most suitable linking word (in contrast, according to, compared to, likewise, because, in favor of, but) for each gap.
1. … it's not uncommon to see job advertisements that place "ability to multitask" at the top of their list of required abilities.
2. This last finding was surprising, …, psychologists know that multitasking involves switching rapidly between tasks rather than actually performing multiple tasks simultaneously.
3. …, people who do not usually engage in media-multitasking showed a greater ability to focus on important information.
4. They found that the high- and low- media-multitasking groups were equally able to control their responses, …that the heavy media-multitasking group had difficulties.
5. …the low media-multitasking group, when asked to ignore information that was in the environment or in their recent memory.
6. …the researchers, this reflects two fundamentally different strategies of information processing.
7. On the other extreme are those who avoid breadth …information that is relevant to an immediate goal.

Task 3. Topics for discussion:

1. What do you mean by "information"?
2. How much information do you usually receive every day? How much of it do you really need? Can you agree with Sherlock Holms that we don't need information which is useless in our work, or anyway we should know that "The Earth orbits the Sun"?

Text 8

Exercise 1. Make nouns from the following adjectives and adjectives from the following nouns according to the model and translate them.

Model: dark – dark[ness], use – use[less]

1. weak	a. regard
2. productive	b. use
3. easy	c. purpose
4. good	d. direction
5. great	e. time
6. common	f. step
7. usual	g. help
8. heavy	h. effort
9. hard	i. object

PORTRAIT OF A MULTITASKING MIND

Part 2

It seems that chronic media-multitaskers are more susceptible to distractions. In contrast, people who do not usually engage in media-multitasking showed a greater ability to focus on important information. According to the researchers, this reflects two fundamentally different strategies of information processing. Those who engage in media-multitasking more frequently are "breadth-biased," preferring to explore any available information rather than restrict themselves. As Lin Lin at the University of North Texas puts it in a review of the article; they develop a habit of treating all information equally. On the other extreme are those who avoid breadth in favor of information that is relevant to an immediate goal.

So what does this mean for you, reading this article listening to music and surfing the internet? Are you in trouble? Should you curb your media congestion? Not necessarily. Breadth-bias may still serve a purpose in our media-heavy society. While the researchers focused on a type of control known as "top-down" attention, meaning that control is initiated by higher-level mental processes such as cognition in service of a specific goal, they suggest that heavy media-multitaskers might be better at "bottom-up" attention. In this type of control, cues from the external world drive your attention through lower-level mental processes such as perception and habit. In our fast-paced and technologically advancing society, it may be that having a single goal on which to focus our efforts is a luxury. We may often be better served by a control strategy that is cued by the demands of our surroundings. Look around yourself - do you see notes and to-do lists? Piles of objects meant to remind you about tasks and goals? These sorts of reminders are a great way to take advantage of bottom-up attentional control, and this type of control might in fact be more influential in our lives than we realize.

According to the Dual Mechanisms account of control, proposed in 2007 byTodd S. Braver of Washington University St. Louis, Jeremy R. Gray of Yale University, and Gregory C. Burgess of the University of Colorado at Boulder, this sort of breadth-biased, bottom-up control (which they term "reactive") is particularly good in situations where the environment changes a lot and when the information

relevant to a goal isn't all that reliable. For example, if you are trying to decide whether to carry an umbrella on your walk to dinner, your experience upon stepping outside for a moment might lead to a better decision than any plan you made based on the morning's weather report. Braver and colleagues also suggest that relying on reactive control helps us develop habits more easily, which help us respond to common situations with greater speed and less effort than top-down control (which they term "proactive").

The distractibility seen in heavy media-multitaskers could also reflect a basic attraction for novelty or information. Or it could simply reflect the fact that focusing is hard. One interesting but unanswered question noted by the scientists is whether multitasking causes, or is caused by, the weaknesses in cognitive control that were observed in the heavy multitaskers. Does media-multitasking make people more distractible, or are people who are more easily distracted more likely to become media-multitaskers?

The researchers point out that cutting back on media-multitasking could reduce distractibility in the real-world regardless of the causal direction by addressing either the symptom or the cause. If you are a distractible person who uses multiple media at once, take advantage of your reactive control: try organizing your environment so that your distractions lead you in productive directions (project-piles, reminder notes) rather than toward irrelevant (albeit fun or interesting) information. If, however, you are a media-multitasker who thinks that you're becoming a more distractible person, then maybe it's just time to turn off the gadgets for a while.

Notes:

- susceptible – восприимчивый
- curb - обуздывать, сдерживать, укрощать, усмирять
- cognition - познание; узнавание, распознавание
- cue - давать команду вызова; команда вызова
- distractible – рассеянный, невнимательный

Task 1. True or false?

1. High score at multitasking is usually connected with great skills to switch quickly between distinct tasks.
2. You have to be a multitasker to be good in information processing.
3. The only problem for high-level multitasker is lack of time and energy.
4. Using of reminder notes is a good way to perform many tasks.
5. Multitasking makes people helpless to perform task requiring high level of focusing.
6. Psychologists are sure that reducing of media-multitasking can increase the ability to focus on particular problem.
7. Multitasking doesn't really affect ability to response.

Task 2. Answer the questions.

1. How do you usually run information?
2. Are you the media addicted? How long can you live without the media?
3. Are you a media multitasker?
4. How does media-multitasking influence people?
5. How do high- and low- media multitaskers run information?
6. What problem do media-multitaskers suffer from?
7. What was recommended to media-multitaskers?
8. Who has more advantages: high- or low- media multitasker? Why?

Task 3. Find the paragraph that isn't important for the whole text.

Text 9

Exercise 1. ***Make adverbs from the following adjectives according to the model and translate them.***
Adjective + ly
current, human, painstaking, fanciful, active, new.

Exercise 2. ***Read and translate the collocations***.
Life expectancy, the rise would tail off, to reach the limit, human longevity, the only way, genetic engineering, we could conquer death, to slow the process, limited priority, long-term maintenance.

THE QUEST FOR IMMORTALITY

Scientific breakthroughs mean that life expectancy continues to rise every year. But the medical advances which now make it possible to contemplate living to a very great age – if not forever – also raise profound practical and ethical issues.

Over the past century, life expectancy in developed countries has risen at an astonishing rate. In Britain, for example, the average mail lifespan went up from 48 in 1901 to 75 in 2000. (During the same time, the female lifespan rose from 49 to 80.) Scientists have always imagined that this rise would tail off, but that does not seem to be happening. Since 1840, people born in any year have, on average, lived three months longer than those born the previous year – a consistent increase that still holds true today. A paper published in *Science* magazine has warned that, at the current rate, female life expectancy in developed countries could be as high as 101 by 2070.

We are lasting so much longer mainly because of better nutrition, better housing, vaccination programmes and a dramatic reduction in infant mortality due to advances in both pre-natal and post-natal care. Since there is only limited potential for further advances in these areas, some scientists think we have almost reached the limit of human longevity. Dr Jay Olshansky, of the university of Chicago, for example, believes that the only way of adding to life expectancy now is to make old people live

longer – a painstaking process that will be measured in weeks or months, not years. The real challenge now facing biologists is to learn how to delay the ageing process.

So immortality is a realistic prospect not for the foreseeable future. The gerontologist, Professor Tom Kirkwood firmly quashed the notion that genetic engineering might result in some kind of "fountain of youth". Considering how frustratingly slow the battles against cancer, heart disease and strokes have been, he said it is fanciful to imagine that we could conquer death. On the other hand, scientists do now understand more about why we age, and what can be done to slow the process. "Our ancestral genes placed limited priority on long-term maintenance and repair ," sais Kirkwood. "Ageing comes about through the gradual build-up of unprepared faults in the cells and tissues of our bodies, not as the result of some active mechanism for death and destruction." The trick, then, is to help the body repair the damage done by wear and tear.

That can be done in many different ways, some of which are already pretty commonplace. Organ transplants from pigs and monkeys are now old news – the American politician Jess Helms has just had a ten-year-old pig valve in his heart replaced. Laser eye surgery has become so commonplace that Americans can now get it in shopping malls. Doctors have succeeded in wiring computerized implants directly to nerve fibres, allowing the deaf to hear, and there is hope that electrodes planted in the brain may soon offer hope for the blind to see. But the real potential at the moment lies in the field of stem cells – special cells that allow lizards to grow new tails and humans to grow new skin over minor cuts. If scientists can learn how to control these cells, they could be used to regenerate parts of the body that are failing.

Notes:

breakthrough	крупное достижение, открытие
lifespan	продолжительность жизни
(pre/post)natal	относящийся к рождению
longevity	долголетие, долгожительство
painstaking (process)	кропотливый, тщательный процесс
ageing (=aging)	старение
foreseeable (future)	поддающийся предвидению
gerontology	геронтология, учение о старости
quash	подавлять, сокрушать
stroke	решающий довод, удар, приём, ход
to age	стареть
ancestral (genes)	наследственный, родовой
wear and tear (of life)	жизненные передряги
valve	клапан (сердца)
stem cells	стволовые клетки

Task 1. Read the text again to decide which of the statements below a) possibly true, b) definitely true or c) unlikely:

1). People in the UK are living much longer than they used to.

2). It will be common for women to live to over 100 in the year 2070.
3). Infant mortality will continue to fall sharply.
4). Life expectancy will not carry on rising as dramatically as in the past.
5). One day we may be able to live forever.
6). Scientists understand much more about the ageing process nowadays.
7) Replacing body parts is now a common operation.
8). There will be a cure for blindness in the future.

Task 2. Give your viewpoint on the following topics.
1) How long are we living now?
2) Why are we lasting so much longer?
3) Is immortality a realistic prospect? How that can be done?

TEXT 10

Exercise 1. ***Before reading the text discuss the following questions.***

1). Do you have a mobile phone? How long have you had it?
2). What do you use it for? How often do you use it?
3). Is it an important part of everyday life in your country?

Exercise 2 . ***Match the words and phrases with their definitions.***

a) stagnate v(stagnated) b) ubiquitous adj.(ubiquity) ***c)*** taciturn adj. d) dexterity n e) blur v(blurring)	1. to become or make sth, become difficult to distinguish clearly 2. skill in using your hands or your mind 3. seeming to be everywhere or in several places at the same time 4. tending not to say very much, in a way that seems unfriendly ***5.*** to stop developing or making process

HOW THE MOBILE PHONE CHANGED THE WORLD?

The number of global phone users had doubled in two years to pass the 1 billion mark, China had just overtaken America as the world's largest market and across Africa subscriptions were doubling.

In Europe the market may have stagnated but across the world the mobile has leapt from obscurity towards ubiquity, The tool, once considered a toy for the elite, has today crossed social and geographical boundaries to find its way into the hands of the young, the old, the rich and the poor, even in communities largely untouched by the technologies.

It was amazed to see how fast, how far and with what diversity the mobile phone has spread. Because it extends a most basic human quality – the ability to communicate – there are few aspects of life that it fails to touch.

Students in Beijing explained the importance of maintaining contact with families in which they are the only children. Go-go dancers in Bangkok said that mobiles had given them a new chance to arrange dates free of a middleman. Somali traders on dhows moored in Dubai explained how their mobiles allowed them to keep up with the movements of goods between Mogadishu and the Middle East. In Birmingham, teenage girls convinced that because mobile phones 'make it cool to talk', even their most taciturn male friends are becoming more communicative.

Teenagers have become the conduits through which mobile phones have found their way into the wider society. For the young throughout the world the sense of freedom of movement and the privacy afforded by the mobile are highly valued. In spite of the high incidence of phone theft in the UK, they value the security of knowing that assistance-often a lift home-is only a call away.

In Japan the teenage generation has become known as *oya yubi sedai*. The thumb tribe, on account of the dexterity with which they text, unaccountable to an older generation.

Mobile phones encourage and respond to the mobility. In China, which is witnessing vast movements of people, the mobile has become a crucial part of migrant life: a way to keep in touch with families back home and also a means of establishing oneself in a new social environment. In Thailand, many students said that they could move south to Bangkok only when their parents were assured that they could keep in touch by mobile phone.

Connecting people rather than locations, the mobile phone alters people's expectations about what is possible and desirable and changes the parameters of their social lives. It affects their perceptions of themselves, their boundaries and capacities: it is ridiculous to compare a mobile to a prosthetic organ but carried on the person, often all the time, it is something to which people grow attached. It alters the experience of solitude, providing a stream of ways to fill dead time and constant reminders – not always welcome – that one is never quite alone.

Mobiles have changed the parameters of public space, too, blurring the edges of the private world. Visible and audible to all, their usage has rewritten many social rules about where, when and what one should communicate.

It is in developing countries that the mobile phone's impact has been the most immediate. Bangladesh is one of several countries in which mobiles are used as public village telephones, sometimes powered by solar energy, and often offering access to the latest digital services. The mobile has become a political tool, too. Gossip, jokes and trivia first spread text messaging across the Philippines; but during the fall of the government last year, vital news and information moved around the networks.

Notes:

1. leap (leapt, leaped)	1. to move or do sth suddenly and quickly
2. dhow n	2. an Arab ship with one large sail in the shape of a triangle
3. moor v	3. to attach a boat, ship, etc. to a fixed object or to the land with a rope
4. obscurity n	

5. go-go adj.	4. the state in which sb/sth is not well known or has been forgotten
6. middleman n	5. connected with a style of dancing to pop music in which women dance wearing very few clothes
7. conduit n	6. a person who helps to arrange things between people who do not want to talk directly with each other
8. text v	7. a person, an organization or a country that is used to pass things or information to other people or places
	8. to send a written message using a mobile phone

Task 1. Read the article and be ready to discuss the following.

1. What had happened to the number of mobile phone users in the last decade?
2. What basic human quality is explained by the mobile phone?
3. Which section of society is mainly responsible for the spread of mobile phones?
4. How has the mobile phone altered 'our experience of solitude'?
5. Where are mobile phone subscriptions doubling?
6. How or why are mobile phones used by the following:
    a. students in Beijing
    b. Somali traders in Dubai
    c. teenage girls in Birmingham
    d. the migrant population in China
    e. villages in Bangladesh
    f. political activists in the Philippines?
7. Why are teenagers in Japan called 'the Thumb Tribe'?
8. Why is the mobile phone compared to a 'prosthetic organ'?

Task 2. Look through the following extracts from the article and express your viewpoint.

- "…their usage has rewritten many social rules about where, when and what one should communicate."

1. Are there any 'social' rules about mobile phone usage in your country?
2. What advice would you give a foreign visitor to your country about the use of a mobile phone?

-"…the mobile phone alters people's expectations about what is possible and desirable and changes the parameters of their social lives".

1. Can you think of any examples of how the mobile phone has changed our expectations or social lives?

2. Do you agree that the mobile phone has had a major impact on our lives? Has it become indispensable or would life be better without it?

Part II

Texts for reading and translation

(Tasks to be done at home and continued in class)

Text 1

SCIENCE AND TECHNOLOGY

1. Science problems can be roughly classified as analytic and synthetic. In analytic problems we seek the principles of the most profound natural processes, the scientist working always at the edge of the unknown. This is the situation today, for instance, within the two extremes of research in physics -elementary particle physics and astrophysics - both concerned with the properties of matter, one on the smallest, the other on the grandest scale. Research objectives in these fields are determined by the internal logic of the development of the field itself. Revolutionary shocks to the foundations of scientific ideas can be anticipated from these very areas.
2. As to synthetic problems, they are more often studied because of the possibilities which they hold for practical applications, immediate and distant, than because their solution is called for by the logic of science. This kind of motivation strongly influences the nature of scientific thinking and the methods employed in solving problems. Instead of the traditional scientific question: "How is this to be explained?" the question behind the research becomes "How is this to be done?" The doing involves the production of a new substance or a new process with certain predetermined characteristics. In many areas of science, the division between science and technology is being erased and the chain of research gradually becomes the sequence of technological and engineering stages involved in working out a problem.
3. In this sense, science is a Janus-headed figure. On the one hand, it is pure science, striving to reach the essence of the laws of the material world. On the other hand, it is the basis of a new technology, the workshop of bold technical ideas, and the driving force behind continuous technical progress.
4. In popular books and journals we often read that science is making greater strides every year, that in various fields of science discovery is followed by discovery in as steady stream of increasing significance and that one daring theory opens the way to the next. Such may be the impression with research becoming a collective doing and scientific data exchange a much faster process. Every new idea should immediately be taken up and developed further, forming the initial point of an avalanche-like process.
5. Things are, in fact, much more complex than that. Every year scientists are faced with the problems of working through thicker and tougher material, phenomena at or near the surface having long been explored, researched, and understood. The new relations that we study, say, in the world of elementary particles at dimensions of the order of *10-13* cm or in the world of superstellar objects at distances of billions of

light years from us, demand extremely intense efforts on the part of physicists and astrophysicists, the continuous modernization of laboratories with experimental facilities becoming more and more grandiose and costing enormous sums. Moreover, it should be stressed that scientific equipment rapidly becomes obsolete. Consequently, the pace of scientific development in the areas of greatest theoretical significance is drastically limited by the rate of building new research facilities, the latter depending on a number of economic and technological factors not directly linked to the aims of the research.

Task 1. Be ready to answer the following questions in class.

1. What are the two motive forces behind synthetic and analytic research?
2. What is the main idea of the 4th paragraph?
3. What problems are scientists faced with?
4. Does the pace of scientific development depend on the rate of building new research facilities? Prove your point of view.

Task 2. Translate paragraph 5 in writing.

Topics for discussion

1. The present-day relation between science and technology.
2. Favourable and harmful effects of scientific and technological discoveries on human life.

Text 2

WHAT SCIENCE IS?

1. It can be said that science is a cumulative body of knowledge about the natural world, obtained by the application of a peculiar method practiced by the scientist. It is known that the word *science* itself is derived from the Latin "scire", to know, to have knowledge of, to experience. Fundamental and applied sciences are commonly distinguished, the former being concerned with fundamental laws of nature, the latter engaged in application of the knowledge obtained. Technology is the fruit of applied science, being the concrete practical expression of research done in the laboratory and applied to manufacturing commodities to meet human needs.

2. The word "scientist" was introduced only in 1840 by a Cambridge professor of philosophy who wrote: "We need a name for describing a cultivator of science in general. I should be inclined to call him a scientist". "The cultivators of science" before that time were known as "natural philosophers". They were curious, often eccentric, persons who poked inquiring fingers at nature. In the process of doing so they started a technique of inquiry which is now referred to as the "scientific method".

3. Briefly, the following steps can be distinguished in this method. First comes the thought that initiated the inquiry. It is known, for example, that in 1896 the physicist Henri Becquerel, in his communication to the French Academy of Sciences, reported that he had discovered rays of an unknown nature emitted

spontaneously by uranium salts. His discovery excited Marie Curie, and together with her husband Pierre Curie she tried to obtain more knowledge about the radiation. What was it exactly? Where did it come from?

4. Second comes the collecting of facts: the techniques of doing this will differ according to the problem which is to be solved. But it is based on the experiment in which anything may be used to gather the essential data - from a test-tube to an earth-satellite. It is known that the Curies encountered great difficulties in gathering their facts, as they investigated the mysterious uranium rays.

5. This leads to step three: organizing the facts and studying the relationships that emerge. It was already noted that the above rays were different from anything known. How to explain this? Did this radiation come from the atom itself? It might be expected that other materials also have the property of emitting radiation. Some investigations made by Mme Curie proved that this was so. The discovery was followed by further experiments with "active" radioelements only.

6. Step four consists of stating a hypothesis or theory: that is, framing a general truth that has emerged, and that may be modified as new facts emerge. In July 1898, the Curies announced the probable presence in pitchblende ores of a new element possessing powerful radioactivity. This was the beginning of the discovery of radium.

7. Then follows the clearer statement of the theory. In December 1898, the Curies reported to the Academy of Sciences: "The various reasons enumerated lead us to believe that the new radioactive substance contains a new element to which we propose to give the name of Radium. The new radioactive substance certainly contains a great amount of barium, and still its radioactivity is considerable. It can be suggested therefore that the radioactivity of radium must be enormous".

8. And the final step is the practical test of the theory, i. e. the prediction of new facts. This is essential, because from this flows the possibility of control by man of the forces of nature that are newly revealed.

9. Note should be taken of how Marie Curie used deductive reasoning in order to proceed with her research, this kind of "detective work" being basic to the methodology of science. It should be stressed further that she dealt with probability - and not with certainty - in her investigation. Also, although the Curies were doing the basic research work at great expense to themselves in hard physical toil, they knew that were part of an international group of people all concerned with their search for truth. Their reports were published and immediately examined by scientists all over the world. Any defects in their arguments would be pointed out to them immediately.

Task 1. State the main idea of the 1st paragraph. Give the Russian equivalents of: a cumulative body of knowledge, a peculiar method practiced by the scientist, manufacturing commodities to meet human needs.

Task 2. Identify the topic sentence of the 7 th paragraph.

Task 3. Find the sentence describing the final step in the development of hypothesis.

Task 4. Be ready to answer the following questions in class.

1. What do you know about the origin of the word "science"?
2. When and where was the word "scientist" introduced? What did it mean?
3. How many steps can be distinguished in the "scientific method"?
4. What is the process of collecting of facts based on?
5. What does the 3^{d} step consist of?

Task 5. Translate paragraph 9 in writing.

Topics for discussion

1. The main steps of the "scientific method".
2. The role of deductive reasoning in science.

Text 3

Research: Fundamental and Applied, and the Public

1. People are always talking about fundamental research, implying thereby the existence of a nameless opposite. A good definition of fundamental research will certainly be welcomed: let us see whether we can invent one. We have to begin, of course, by defining research. Unfortunately the concept of research contains a negative element. Research is searching without knowing what you are going to find: if you know what you are going to find you have already found it, and your activity is not research. Now, since the outcome of your research is unknown, how can you know whether it will be fundamental or not?

2. We may say for instance that fundamental research is that which you undertake without caring whether the results will be of practical value or not. It may not be reasonable to go further and say that fundamental research is that which will be abandoned as soon as it shows a sign of leading to results of practical value. By saying this you may limit your own achievement. It will be better to say that fundamental research is that which may have no immediate practical value, but can be counted upon as leading to practical value sooner or later. The extension of knowledge and understanding of the world around us will always be profitable in the long run, if not in the short.

3. This is a very powerful argument for fundamental research and it is a completely unassailable one, and yet there are people who will not like it. Let us seek a definition that will give fundamental research a value of its own, not dependent upon other uses appearing soon or late. We say, for instance, that fundamental research is that which extends the theory. Now we have to theorize upon theory.

4. There have been several viewpoints about theory. One is that theory discerns the underlying simplicity of the universe. The non-theorist sees a confused mass of

phenomena: when he becomes a theorist they fuse into a simple and dignified structure. But some contemporary theories are so intricate that an increasing number of people prefer dealing with the confusion of the phenomena than with the confusion of theory.

5. A different idea suggests that theory enables one to calculate the result of an experiment in a shorter time than it takes to perform the experiment. I do not think that the definition is very pleasing to the theorists, for some problems are obviously solved more quickly by experimentors than by theorists.

6. Another viewpoint is that theory serves to suggest new experiments. This is sound, but it makes the theorist the handman of the experimentator, and be may not like this auxiliary role. Still another viewpoint is that theory serves to discourage the waste of time on making useless experiments.

Task 1. Divide the text into its logical parts and give a title to each part.
Task 2. Explain the meaning of the words "research", "definition", "argument" in English. Give the sentences of your own using these words.
Task 3. What have you learnt about:

a) fundamental research
b) different viewpoints about theory
c) possible outcome of the research

Task 4. Give your point of view.

a) Fundamental research have no immediate practical value.
b) Research is searching without knowing what you are going to find.

Text 4

THE ENVIRONMENT: PROBLEMS AND SOLUTIONS

1. Should any one attempt a brief characterization of the present-day environment problems he would find it beyond the competence of an individual scientist. For the environmental situation has long become a subject of separate and joint research efforts of biologists, chemists, and biochemists who have to combine their knowledge with the information supplied by students of geology, oceanography and meteorology, with experts in sociology, psychology and philosophy hurriedly joining in. Yet, if stated briefly, one of the causes of the present-day environmental situation should be sought in the lack of a balanced development of particular fields of knowledge, and of an adequate picture of the intricately operating whole which is our planet. The rapid and ever-growing advances in certain highly specialized fields have brought mankind far ahead of our general fundamental knowledge of the long-range effect of some technological developments, spectacular though they may appear, especially of their interplay and interdependence. It is man's intervention in nature that has singled him out from the rest of the animal world since his early days. It is this very intervention that has landed him nowadays in this highly technological world of ours, with the rate of progress in particular applied fields being faster than that in our fundamental knowledge of the general operation of the Earth. It is precisely this discrepancy

between the two rates which seems to be at the root of most of today's problems. This is by no means an exhaustive explanation, ignoring as it does, the social factor.

2. The threat to his environment is a challenging problem man is faced with at the end of the 20th century. What is so peculiar about the environmental crisis when compared to the other menacing problem, that of a nuclear catastrophe? Surely not its global character and everybody's involvement. A nuclear catastrophe, as seen nowadays by practically everybody everywhere, would inevitably involve every country, no matter how small or big it is, and would concern every individual, whatever secluded life he might be living. Should it happen, its inescapability is too obvious to be disputed. So is its explosive character. In contrast to this, the environmental crisis is of a cumulative nature. It is just the obscure and intricate pattern of the interaction of all factors that makes it so dangerous. For no single action taken, or decision made, can bring about an immediate catastrophe, nor could there be the last straw or the last step that would set in motion an avalanche of irreversible and immediate events leading to the ultimate gloomy end. It is only step by step that we approach the critical point, were there such a thing as "point" in this context.

3. Consequently, what is needed first and foremost is that we realize the possible adverse impact of the long-range effects of our actions, however noble the motives may seem to us at present, on the entire human race. Out of this realization may come an entirely new approach to the problem, the new approach as proclaimed by Vernadsky of the biosphere governed and operated in accordance with the laws of the human mind. Next comes the urgent need for basic research to get more profound knowledge of the cause-effect relationship, the time factor necessarily taken into account, in the whole realm of human environment, both natural, man-disturbed and man-initiated. Fundamental and irreversible as they may often be, the changes in our environment are not likely to bring mankind to the brink of annihilation overnight. It would take us some time yet to reach there. So let us use the time for learning how to preserve our planet in good shape and in running order for an indefinitely long time.

Task 1.

a) State one of the causes of the present-day environmental problems.
b) What is meant by “the intricately operating whole”?

Task 2. Compare the characteristics of a nuclear catastrophe and that of environmental crisis to see their common and different features.

Task 3.

a) What is the main idea of the 2^{d} paragraph.
b) State the most urgent needs of the situation.

Task 4. Give the title to each paragraph.

Task 5. Suggest possible solutions of the present-day environmental problems.

Task 6. Translate paragraph 3 in writing.

Text 5

FROM A DISTANCE

A Brief History of Distance Learning

Distance learning - a method of study that involves using electronic means (computers, Internet, etc.) to receive and send work rather than going to a school or university

"Knowledge", according to the proverb "is power". And nowadays more and more of our information is gained not in the classroom, but via media such as the Internet, CD-ROM and cable TV all of which are playing a key part in the distance learning revolution. Here are three figures in this key educational change which is transforming our lives in the 21st century.

Sir Isaac Pitman

Those who think that distance learning is a relatively new idea might be surprised to learn that English educator, Sir Isaac Pitman, had the same idea – only then they were called correspondence courses – more than 150 years ago. Taking advantage of the development of a reliable postal system in 1840, Pitman began teaching shorthand (a system for writing down what people are saying using special signs to represent letters, words and phrases) by mail to thousands of students who did not have time to attend school. "Lessons" consisted of copying short passages of the Bible in shorthand, and posting them to Mr. Pitman to be corrected. His brother, Benn Pitman, introduces the idea to the United States, and the Pitman shorthand system – which has been adapted to fifteen other languages – is still one of the most widely used shorthand system in the world.

The Open University

When it was established in 1969, the Open University offered courses via mail, with the back-up of regular TV and radio programmes shown outside normal broadcast times. Each student was assigned a tutor who discussed the course work over the phone, and in group sessions in the evenings or weekends. Thirty years on, the Open University has expanded to include the Internet, videoconferencing, satellite broadcast and e-mail. There are no entry qualifications or admission interviews, and anyone over the age of 18 can follow one of their courses. It is now Britain's largest single teaching institution, with more than 200,000 people studying its courses every year, with another 16,000 in other countries around the world.

John Hendricks and the Discovery Channel

After a successful career in university education, John S Hendricks entered the TV business and launched the Discovery Channel – the first cable TV channel exclusively devoted to documentaries and nature programmes – in June 1985. Today the company's programmes reach over 150 million subscribers in more than a hundred countries. In an age where competition for TV audience has never been tougher, the Discovery Channel's high-quality, educational approach continues to defy those who believe that TV is only about mindless entertainment. The BBC programme *Walking with Dinosaurs* became the most-watched documentary in TV history when it was shown on the Discovery Channel in 2000.

Task 1. Read the article about distance learning and be ready to discuss the following questions.

1) Who was the first get the idea of teaching by correspondence?
2) Who took the idea of correspondence courses to the United States?
3) What three methods were originally used for course work by the Open University?
4) What entry qualifications are required to do a course at the Open University?
5) What type of programmers are shown in the Discovery Channel?
6) What programme attracted the most viewers for a TV documentary?

Task 2. Name the main idea of each paragraph.

Task 3. Find some more information about distance learning and prepare a report.

Text 6

OPTICAL FIBER FABRIC DISPLAYS

Imagine donning a jacket that can play a video or display various images that have been downloaded from the Internet. A group of French researchers have developed optical fiber fabric displays that could make such"communicative clothing" possible.

Flexible displays can be created on textiles by producing a screen matrix using the texture of the fabric during the weaving process. A small electronic device that is integrated into the system controls the Light Emitting Diodes (LEDs) that illuminate groups of fibers. Each group provides light to one pixel on the matrix.

These displays are very thin and ultra lightweight - two characteristics that could enable many innovative applications. Although initially developed for clothing, the displays could be used to exhibit information or designs in cars, portable electronic devices and even houses and buildings. Indeed, research on the design and development of flexible displays based on processed optical fibers has opened up new frontiers in fashion, public safety, automotive equipment and home decoration.

Weaving optical fibers

Poly(methyl methacrylate) (PMMA) optical fibers possess a rigidity and fragility that make them different from most traditional textile fiber threads and filaments. With regard to section diameter, a good compromise must be reached: A diameter that is too large can cause inflexibility, while a too-small diameter induces a low shear resistance and loss of light intensity.

Weaving takes place on a traditional two-dimensional loom. The optical fibers can be woven or placed in a chain, in addition to other kinds of yarns. Therefore, it is theoretically possible to obtain an optical fiber X-Y network. However, this would present several disadvantages:

- The grid (and, hence, the resolution) would not be very dense and the fabric would be extremely rigid because of the relatively high radius of curvature of optical fibers.
- Constituting an optical fiber chain is very long and very expensive.

- The resolution would be tiny.

Thus, our initial plan was to develop a fabric comprising optical fibers for wefts and silk in chain. Other natural, artificial or synthetic yarns could also have been used to constitute the chain. Yarns were chosen for the chain with the aim of achieving good flexibility in the fabric, fine titration and an improved capacity to diffuse and reflect the light emitted by optical fibers for better legibility of information. Different textile finishing methods are being tested -- either in pasting or in coating - to guarantee grid stability and flame resistance and to enable optimal light emission intensity and contrast.

Display matrix design

The screen for fabric displays comprises a number of surface units, or pixels; each one can be illuminated by a light source emitted from one side of the fabric by one or several PMMA optical fibers with discrete index variation. The pixels are directly formed on optical fibers while transversely forming a spout of light on the fabric. The process consists of generating micro-perforations that reach into the core of the fiber. The remainder of the optical fiber, which did not receive any specific processing, conveys the light without being visible on the surface.

Two processing techniques have been developed for optical fibers. The first is a mechanical treatment by the projection of micro particles with different velocities on the optical fiber's cladding. The second technique uses different chemical solvents to make these micro perforations; this method seems to produce a better final result. Finally, the chemically processed fiber obtained by a scanning electron microscope.

There are three methods that are used to light ON and OFF static patterns on the fabric (texts, logos and scanned pictures), which we adapted to develop our own technique. A basic fabric is used in the first method. The lighting zone to be processed, which is composed of optical fibers, is delimited by a stencil key. The picture remains static—with eventual color changes—but can offer quite a high resolution.

In the second method, the zone to be lit is formed during weaving on a Jacquard loom before being processed. The remaining, inactive fabric is composed of the floating fibers on the back of the fabric.

A third method uses a two-layer adapted basic-velour fabric that makes optical fibers as visible as possible, but with sufficient consistency of fabric structure. Prior to the weaving process, the optical fibers are chemically treated, enabling the specific dynamic lighting zones to be created.

We modified these techniques by creating specific weaving armor and an adapted lighting control in order to generate variable information on the same fabric zone. We developed a matrix that makes it possible to display a great deal of basic information, such as texts, logos or other patterns, in a static or dynamic way.

Because a fabric display can only be produced by columns made of a single optical fiber or group of fibers, we had to create lines artificially. Similar to the process that would be used with two superimposed patterns to be lightened on the same column, this involves alternating two consecutive weft fibers—one for the first pattern, and the other for the second. Each is processed on a precise section in order to re-emit light at a specific place.

The principle is the same for three superimposed patterns, except that one fiber is taken out of three for each pattern. When the weaving is sufficiently tight, a visual impression is given of full, enlightened zones. Chain wires will be able to help diffuse the light toward the dark zones between lightened segments. The number of rows to be produced seems limited by the technique, insofar as, on the same unit zone, more dark zones are produced than lightened ones. The appreciation of the definition will then be based on the size of the pixels and the screen, in addition to the distance from which people watch the screen.

Various light sources can be used to feed the matrix. The choice mainly depends on the number of fibers connected to each source and the level of power consumption. For the first prototypes, we used high luminous LEDs that are 3 mm in diameter. LED technology has many advantages, as diodes can be easily driven by electronics under low voltages (2V to 4V, depending on the color). Therefore, many "light effects" can be generated on the display, such as flashing or varying the intensity of the light, providing all kinds of animated movies.

The very first OFFD was displayed on a jacket. It comprises a screen matrix specially designed to display on one line three 60 mm x 60 mm alphanumeric characters, each made up of three rows and three columns using 0.5 mm diameter optical fibers and a 7 fibers/cm width density. Each pixel is composed of four fiber segments and is controlled by one LED located in the lining of the cloth, on one side of the OFFD. The color of the pixels is determined by the corresponding LEDs.

OFFDs offer another possibility: Although the definition is limited by the number of rows, it is possible to repeat on fabric the same line of characters or patterns in the direction imposed by optical fibers. The fixed or animated pattern reproduction can be used for purely decorative applications; for example, to create a mural tapestry adapting its colors to the clothes worn by the occupants of a room.

Implications and applications

Optical fiber screens provide access to simple and animated visual information, such as texts or pictograms. It is possible to download, create or exchange visuals via the appropriate Internet gateway. Conceivably, images or text could be sent using wireless technology from a computer or a mobile Internet terminal to an article of clothing.

The main functions of the new prototypes are:

- To "be seen," for security, publicity, recreational or aesthetic purposes
- To show one's affiliation or support for a group
- To personalize one's clothing according to the latest fashions
- To communicate or exchange information or to signpost advice.

Fabrics based on flexible display technology have the obvious potential to influence fashion designers, but they have a variety of other useful applications as well. OFFDs can be used as displays for mobile phones, PDAs (personal digital assistants), wearable computers and other portable electronic devices.

Notes:

- loom - 1) ткацкий станок 2) ткачество

- rigid - жёсткий, негнущийся, негибкий; несгибаемый, твёрдый, неподатливый
- weft -1) уток 2) ткань 3) сплетение, переплетение
- yarn - нить, пряжа
- legibility - чёткость, разборчивость
- superimpose - накладывать (одно на другое)
- luminous – светящийся
- cladding - заключение в оболочку
- aesthetic - эстетический

Task 1. State the part of speech of the following words and determine their meaning without using a dictionary.

- Characteristic, characterize, characterization
- Apply, application, applicable, applicant
- Develop, development, underdeveloped
- Different, difference, differentiate, differentiation
- Adapt, adaptable, adaptability, adaptation
- Possible, possibility, impossible, possibly

Task 2. Find synonyms for the following verbs.

Personalize, communicate, show, use, choose, constitute, resist, illuminate, impose, design.

Task 3.

1. What types of display do you know?
2. How do they work?

Task 4. Find the main idea of each part of the article.

Task 5. Extract unimportant information.

Task 6. Topics for discussion:

1. How does optical fiber display work?
2. Where can optical fiber displays be used? Describe any possible usage.

Text 7

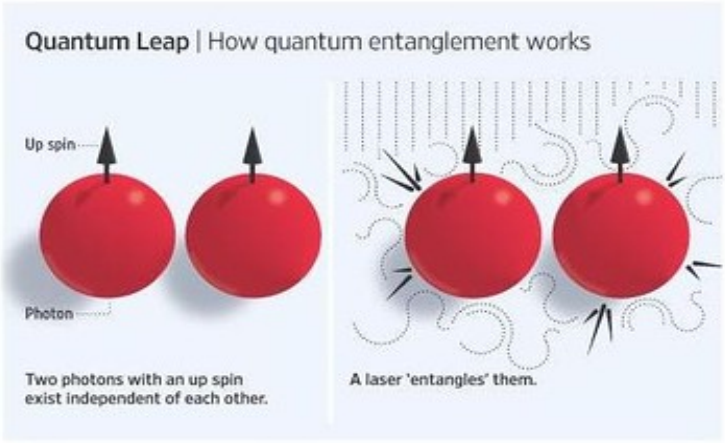
SCIENCE, SPIRITUALITY, AND SOME MISMATCHED SOCKS

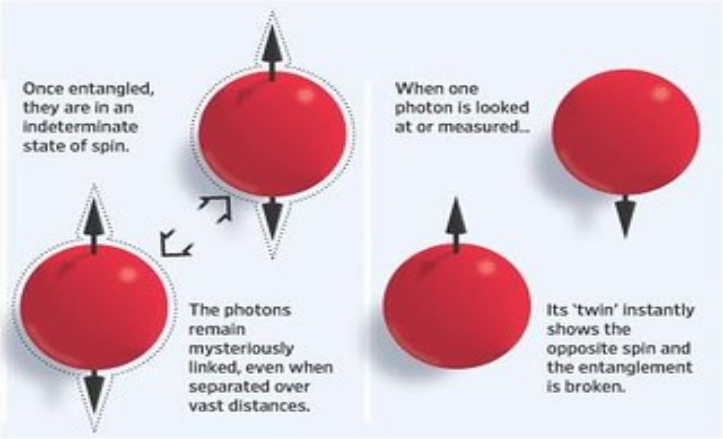
Part 1

Researchers Turn Up Evidence of 'Spooky' Quantum Behavior and Put It to Work in Encryption and Philosophy

1. One of quantum physics' crazier notions is that two particles seem to communicate with each other instantly, even when they're billions of miles apart. Albert Einstein,

arguing that nothing travels faster than light, dismissed this as impossible "spooky action at a distance."
2. The great man may have been wrong. A series of recent mind-bending laboratory experiments has given scientists an unprecedented peek behind the quantum veil, confirming that this realm is as mysterious as imagined.
3. Some key developments around one of quantum physics' weirdest notions: that two particles can affect each other even when they are billions of miles apart.
4. Quantum physics is the study of the very small atoms, photons and other particles. Unlike the cause-and-effect of our everyday physical world, subatomic particles defy common sense and behave in wacky ways. That includes the fact that a photon, which is a particle of light, exists in a haze of multiple behaviors. They spin in many ways, such as "up" or "down," at the same time. Even trickier, it's only when you take a peek by measuring it that the photon fixes into a particular state of spin.
5. Stranger still is entanglement. When two photons get "entangled" they behave like a joint entity. Even when they're miles apart, if the spin of one particle is changed, the spin of the other instantly changes, too. This direct influence of one object on another distant one is called non-locality.
6. These peculiar properties have already been proven in a lab and tapped to improve data encryption. They could also one day be used to build much faster computers. Some philosophers see quantum phenomena as a sign of far greater unknown forces at work and it bolsters their view that a spiritual dimension exists.
7. "We don't know how nature manages to produce spooky behavior," says Nicolas Gisin, a scientist at Geneva University, who led a recent experiment demonstrating action-at-a-distance. "But it's a fascinating time for physics because it can be mastered and exploited."
8. Einstein refused to believe that a photon could be in all states at once and set out to find an explanation for their seemingly odd behavior. God doesn't play dice with the universe, he said at the time. Danish physicist Neils Bohr, a big proponent of quantum uncertainty, shot back: "Quit telling God what to do."
9. Trying to poke holes in the notion of spooky action at a distance, Einstein and two colleagues published a paper in 1935 that appeared to demonstrate the existence of mysterious "hidden variables" and show that quantum theory was incomplete. In a seminal 1964 paper, Irish physicist John Bell raised questions about the mathematical validity of Einstein's work.





10. In a 1981 paper, Mr. Bell took a swing at Einstein's notion of "hidden variables" by relating the sock-wearing patterns of his physicist colleague Reinhold Bertlmann. Mr. Bell noted that if he saw one of Mr. Bertlmann's feet coming around the corner and it had a pink sock, he would instantly know, without seeing the other foot, that the second sock wouldn't be pink. To the casual observer that may seem magical, or controlled by "hidden variables," but it was no mystery to Mr. Bell because he knew that Mr. Bertlmann liked to wear mismatched socks. Quantum particles behave a lot more oddly, and, thanks to Mr. Bell's work, experiment after experiment has shown that to be true.
11. Dr. Gisin and colleagues at Geneva University described how they had entangled a pair of photons in their lab. They then fired them, along fiber-optic cables of exactly equal length, to two Swiss villages some 11 miles apart.
12. During the journey, when one photon switched to a slightly higher energy level, its twin instantly switched to a slightly lower one. But the sum of the energies stayed constant, proving that the photons remained entangled.
13. More important, the team couldn't detect any time difference in the changes. "If there was any communication, it would have to have been at least 10,000 times the speed of light," says Dr. Gisin. "Because this is such an unlikely speed, the conclusion is there couldn't have been communication and so there is non-locality."

Notes:

- spooky - зловещий; жуткий; страшный
- veil – вуаль
- realm - сфера, область
- weird - потусторонний, сверхъестественный, таинственный
- wacky - чокнутый; со странностями, эксцентричный; странный
- haze - лёгкий туман
- entanglement - запутанность; затруднительное положение
- encryption - шифрование, зашифровывание
- poke - совать, пихать, тыкать, толкать

Task 1. Make words with the negative meaning using prefixes (un-, dis-, im-, in-) from the following and translate them.

Missed, like, known, possible, certainly, complete, matched, seen, similar, equal.

Task 2. Find the keywords in the each paragraph.

Task 3. Give your answers to the following questions.

- What is quantum physics?
- What do you mean by “paradox”?

Task 4. Translate paragraphs 1-7 in writing.

Text 7

SCIENCE, SPIRITUALITY, AND SOME MISMATCHED SOCKS

Part 2

Other scientists have gotten a more direct look at the particles' secret behavior. They pulled off this feat by resolving something called Hardy's paradox, which basically addressed one of the trickiest aspects of quantum physics: by observing a particle you might affect its property.

In 1990, the English physicist Lucien Hardy devised a thought experiment. The common view was that when a particle met its antiparticle, the pair destroyed each other in an explosion. But Mr. Hardy noted that in some cases when the particles' interaction wasn't observed, they wouldn't annihilate each other. The paradox: Because the interaction had to remain unseen, it couldn't be confirmed.

In a striking achievement, scientists from Osaka University have resolved the paradox. They used extremely weak measurements -- the equivalent of a sidelong glance, as it were -- that didn't disturb the photons' state. By doing the experiment multiple times and pooling those weak measurements, they got enough good data to show that the particles didn't annihilate. The conclusion: When the particles weren't observed, they behaved differently.

In a paper published in the New Journal of Physics, the Japanese team acknowledged that their result was "preposterous." Yet, they noted, it "gives us new insights into the spooky nature of quantum mechanics." A team from the University of Toronto published similar results some months later.

Some researchers are using the uncertain state of photons to solve real-world problems. When encrypting sensitive data such as a bank transfer, both the sending party and the receiving party must have the same key. The sender needs the key to hide the message and the receiver to reveal it. Since it isn't always practical to exchange keys in person, the key must be sent electronically, too. This means the key (and the messages) may be intercepted and read by an eavesdropper.

An electronic key is usually written in the computer binary code of "ones" and "zeros." Quantum physics permits a more sophisticated approach. The same "ones" and "zeros" can now be encoded by using the properties of photons, like spin. If someone intercepts a photon-based message, the spins change. The receiver then knows the key has been compromised.

MagiQ Technologies Inc. of Cambridge, Mass., refreshes its quantum keys as often as 100 times a second during a transmission, making it extremely hard to break. It sells its technology to banks and companies. Dr. Gisin is a founder of ID Quantique SA in Switzerland. The company's similar encryption tool is used by online lottery and poker firms to safely communicate winning numbers and winning hands. Votes cast in a recent Swiss federal election were sent in a similar way.

Because of its bizarre implications, quantum theory has been used to investigate everything from free will and the paranormal to the enigma of consciousness. Several serious physicists have devoted their lives to the study of such

ideas, including Bernard d'Espagnat. The 87-year-old Frenchman won the prestigious $1.5 million Templeton Prize for years of work affirming "life's spiritual dimension."

Based on quantum behavior, Dr. d'Espagnat's big idea is that science can only probe so far into what is real, and there's a "veiled reality" that will always elude us. Many scientists disagree. While Dr. d'Espagnat concedes that he can't prove his theory, he argues that it's about the notion of mystery. "The emotions you get from listening to Mozart," he says, "are like the faint glimpses of ultimate reality we get" from quantum experiments. "I claim nothing more."

Notes:

- eavesdropper - подслушивающий, соглядатай
- bizarre - неестественный, ненормальный, причудливый, странный, эксцентричный

Task 1. Divide the article into its logical parts and title them.
Task 2. Explain "Einstein-Podolsky-Rozen paradox" in your own words.
Task 3. What can you add to the article?
Task 4. Topics for discussion:

1. How do you understand the title?
2. How does the EPR-paradox correlate with quantum theory?
3. What applications for EPR-paradox can be offered?

Text 8

MACHINE TRANSLATION TODAY AND TOMORROW

Part 1

The field of machine translation (MT) was the pioneer research area in computational linguistics during the 1950s and 1960s. When it began, the assumed goal was the automatic translation of all kinds of documents at a quality equaling that of the best human translators. It became apparent very soon that this goal was impossible in the foreseeable future. Human revision of MT output was essential if the results were to be published in any form. At the same time, however, it was found that for many purposes the crude (unedited) MT output could be useful to those who wanted to get a general idea of the content of a text in an unknown language as quickly as possible. For many years, however, this latter use of MT (i.e. as a tool of assimilation, for information gathering and monitoring) was largely ignored. It was assumed that MT should be devoted only to the production of human-quality translations (for dissemination). Many large organizations have large volumes of technical and administrative documentation that have to be translated into many languages. For many years, MT with human assistance has been a cost-effective option for multinational corporations and other multilingual bodies (e.g. the European Union). MT systems produce rough translations which are then revised (post-edited) by translators. But post-editing to an acceptable quality can be expensive, and many organizations reduce costs and improve MT output by the use of 'controlled'

languages, i.e. by reducing (or even eliminating) lexical ambiguity and simplifying complex sentence structures – which may itself enhance the comprehensibility of the original texts. In this way, translation processes are closely linked to technical writing and integrated in the whole documentation workflow, making possible further savings in time and costs. At the same time as organizations have made effective use of MT systems, human translators have been greatly assisted by computer-based translation support tools, e.g. for terminology management, for creating in-house dictionaries and glossaries, for indexing and concordances, for post-editing facilities, and above all (since the end of the 1980s) for storing and searching databases of previously translated texts ('translation memories'). Most commonly these tools are combined in translator workstations – which often incorporate full MT systems as well. Indeed, the converse is now true: MT systems designed for large organizations are including translation memories and other translation tools. As far as systems for dissemination (publishable translations) are concerned the old distinctions between human-assisted MT and computer-aided translation are being blurred, and in the near future may be irrelevant. It is widely agreed that where translation has to be of publishable quality, both human translation and MT have their roles. Machine translation is demonstrably cost-effective for large scale and/or rapid translation of technical documentation and software localization materials. In these and many other situations, the costs of MT plus essential human preparation and revision or the costs of using computerized translation tools (workstations, translation memories, etc.) are significantly less than those of traditional human translation with no computer aids. By contrast, the human translator is (and will remain) unrivalled for non-repetitive linguistically sophisticated texts (e.g. in literature and law), and even for one-off texts in highly specialized technical subjects. However, translation does not have to be always of publishable quality. Speed and accessibility may be more important. From the beginnings of MT, unrevised translations from MT systems have been found useful for low-circulation technical reports, administrative memoranda, intelligence activities, personal correspondence, indeed whenever a document is to be read by just one or two people interested only in the essential message and unconcerned about stylistic quality or even exact terminology. The range of options has expanded significantly since the early 1990s, with the increasing use and rapid development of personal computers and the Internet.

Notes:
dissemination - разбрасывание, рассеивание, распространение
ambiguity –неопределённость, неясность; двусмысленность
concordance – согласие; согласованность

Task 1. Find synonyms for the following adjectives:

Equal, useful, general, quick, rough, expensive, complex, significant, powerful, real.

Task 2. Complete the phrases with say or tell as appropriate.

1. … a story
2. …the time
3. …as far as I can …
4. …yes or no
5. …somebody to do something
6. …somebody what to do
7. … hello
8. …a lie
9. …what you mean
10. …something under your breath

Task 3. Find all collocations with MT and translate them.

Task 4. Divide the text into its logical paragraphs. Find the main idea of each paragraph.

Task 5. In each paragraph find the sentence that isn't important for understanding.

Text 8

MACHINE TRANSLATION TODAY AND TOMORROW

Part 2

1. More powerful PCs have encouraged the marketing of translation software for the general public. As general-purpose systems, the quality is inevitably poor. Input texts often contain high proportions of non-technical, colloquial language of the kind which MT systems have always found most problematic. Quality is usually not good enough for professional translators (although some use the output for drafts), but it is found adequate for individual 'occasional' users, e.g. for gist of foreign texts in their own language, for communicating with others in unknown languages, and for translating Web pages and electronic mail It is the coming of online translation on the Internet, however, that has brought the most significant changes, with potentially far-reaching implications for the future. Exposure to information in many languages has created a rapidly growing demand, and this may well be MT's niche market: the real-time online supply of rough translations to support personal communication and information needs. The quality of the translations can be (and frequently is) ridiculed, but there is no doubt that the output is useful, particularly if the source language is not known at all and if the subject and context are familiar to some extent. The situation is unlikely to improve much (at least in the near future), but some quality improvements may come with specialization, i.e. by the development of systems designed for specific subject areas (as in the large-organization systems), or for specific document types (e.g. patents, letters), or even for specific language registers (e.g. email and text messaging). There are already stand-alone PC systems for

medical translation and for patent documents, but the Internet would be the obvious home for such specialized MT systems. They will probably not be free (as many online translation services are now), but users will surely accept charges for better quality.

2. On the other hand, the ready availability of low-quality MT from Internet services and from commercial stand-alone software could well increase the demand for higher-quality human translation, particularly from those with no previous experience of translation. Some suppliers of online translation are already providing add-on human translation services (e.g. post-editing or full translation). Currently they are used mainly by organizations without their own translation services, but wider use may be expected in the future.

3. For Internet users, a desirable development would be integration with other language applications. What users are seeking is information, in whatever language it may have been written or stored – translation is just a means to that end. Many would welcome the seamless integration of translation with summarization, database mining, document retrieval, information extraction, etc. There is already research on cross-lingual information retrieval, multilingual summarization, multilingual text generation from databases, and so forth, and before many years there may well be systems available on the market and on the Internet.

Perhaps most desired of all are systems capable of translating spoken language – not just for trained speakers in restricted domains (e.g. hotel booking and business negotiations, as in current research projects in Japan, USA and Germany), but for all speakers in all situations.

4. Users will want reliable and accurate results – poor quality text can re-read and puzzled over, spoken output must be understood immediately. Automatic speech translation of open-ended communication will not come in the near future, and may never be possible, but in the medium term we may expect to have systems capable of translating the utterances of most speakers in well defined situations (banks, theatres, airports, rail stations, etc.)

5. At a more mundane level, the language coverage of all MT systems needs to be wider. Currently, most concentrate on the major commercial languages (English, French, German, Spanish, Japanese, Chinese, Korean); and many languages spoken by large populations in developing countries have been ignored by software companies and even by research groups.

Equally, there is a real need for systems to deal with the kind of colloquial (often ill formed and

badly spelled) language found in emails and chatrooms.

6. The traditional rule-based approaches found in current systems are probably not equal to these tasks on their own. In MT research, there is much interest in exploring new techniques in neural networks, parallel processing, and particularly in corpus-based approaches: statistical text analysis (alignment, etc.), example-based machine translation, hybrid systems combining traditional linguistic rules and statistical methods, and so forth. Above all, the crucial problem of lexicon acquisition (always a bottleneck for MT) is receiving major attention by many research groups, in particular by exploiting the large lexical and text resources now available (e.g. from

LDC, ELRA, and the Internet itself). These developments promise faster system development times, and wider deeper language coverage.
7. In time there will be fewer ‘pure’ MT systems (commercial, online, or otherwise) and more computer-based tools and applications where automatic translation is just one component – this will be the case particularly with specialized systems for specific users and specific domains. Integrated translation software will be the norm, available and accessible for anyone from their own computer (desktop, laptop, network-based, etc.) and from other equipment linked to networks (televisions, mobile telephones, hand-held devices, etc.). Most probably, software will no longer be bought for stand-alone computers (whether PCs or client-servers) but accessed from the Internet as and when required. Automatic translation will become an everyday and essential part of the global information society.

Notes:
inevitably – неизбежно, неминуемо
colloquial – разговорный; нелитературный
utterance – выражение в словах, произнесение; произнести, выразить что-то; высказывание
mundane – обычный, приземлённый

Task 1. Use the correct ending (-ance, -ence, -ion, -ation) to form nouns from the given verbs.

Create, offend, form, defend, allow, inspect, resist, prefer, interpret, inform.

Task 2. Translate paragraphs 1 and 2 in writing.

Task 3. Compress the text.

Task 4. Write the plan of the whole text.

Task 5. Topics for discussion.

1. What is the main application of MT?
2. Have you ever used MT? How useful was it?
3. What is the past of MT? What is its future?

Text 9

THE COLOR OF THE SEA

The sea, the sky and other features of the natural world have provided inspiration for many of the great scientific discoveries of humankind. The world of optics is no exception. In 1921, C.V. Raman took an oceanic voyage that led him to study the scattering of light and ultimately discover the vibrational effect that would come to bear his name.

Recently I took a vacation on a cruise ship in the Sea of Cortez off Baja California. Looking out at the fabulous blue color of the sea, I was put in mind of Chandrasekhara Venkata (C.V.) Raman, a boy genius and Palit Chair of Physics at Calcutta University by the age of 29. Raman made his first trip abroad by ship to attend the Congress of the Universities of the British Empire in London in 1921. That trip was to be of singular importance in Raman's life and the field of optics.

Prior to this journey, Raman had spent much of his time studying vibrational and acoustical effects of various kinds. During his stay in London, he visited St. Paul's Cathedral. He was fascinated by the "whispering gallery:" an acoustic phenomenon that allowed a whisper uttered on one side of the circular gallery at the base of St. Paul's great dome to be heard on the opposite side, some 43 m away. Before he left London, Raman had published one of his many letters to Nature explaining the phenomenon and refuting an earlier theory put forward by Lord Rayleigh, 1904 Nobel laureate in physics. This simple tourist encounter is at least partly responsible for the whispering gallery mode lasers in use today ... but I digress.

Raman traveled to and from England by sea. It is said that he sat for hours on the upper deck of the ocean liner staring at the deep blue color of the Mediterranean. During the voyage, Raman conducted experiments peering into the depths of the water using the Nicol (calcium calcite polarization) prism he always carried. He sent a second letter to Nature, titled, "The Colour of the Sea," before even setting foot on dry land, from the .S. S. Narkunda) in Bombay Harbour on September 26, 1921.

Rayleigh had proposed that the ocean's blue color resulted from reflected sky light and absorption by matter suspended in the water. Raman's experiments clearly showed that the blue color was independent of reflection and absorption and due instead to molecular diffraction—most likely from water molecules themselves. These simple experiments led Raman to pursue more detailed studies of light scattering once back home in Calcutta.

In 1923, Compton proved the concept put forward by Planck and Einstein that radiation is not only wave-like, but also particle-like, in nature. When a beam of radiation traverses an atom, most of the radiation is elastically scattered and therefore of unchanged wavelength. Using a graphite target, Compton showed that a small fraction of the radiation emerged in directions other than that of the incident beam due to inelastic scattering of the X-rays by electrons. Inspired by Compton's discovery, Smekal predicted that photons should likewise be scattered inelastically by vibrational transitions within molecules.

Raman and his colleagues at the University of Calcutta and the Indian Association for the Cultivation of Science set out to prove Smekal right. We now know that one of the characteristics of inelastic scattering is that its intensity scales to the fourth power of the energy. This meant that the inelastic scattering effect that Raman sought using visible light (about 500 nm) was at least 10 orders of magnitude weaker than that observed by Compton using X-rays (0.7 nm).

Raman observed this weak effect by using the most intense light source available at the time: the sun. In his initial experiments, he used a 7-in. reflecting telescope in combination with a short focal length eyepiece to focus sunlight onto a purified liquid or its dust-free vapor. He then used complementary yellow-green and blue-violet filters to observe the incident and scattered beams. Using this simple experimental apparatus, Raman discovered that a small amount of the incident light had been inelastically scattered by the molecules in the liquid and shifted in energy into another part of the spectrum. He later observed this shift in wavelength as additional bands on a spectrograph.

This remarkable discovery was made on Monday, February 27, 1928, and described by K.S. Krishnan, Raman's student, in his diary:

Went to the Association in the afternoon. Professor was there. Started studying the effect of incident light wavelength on the new scattering effect. Astonished to see that the scattered radiation has wavelength different from the incident one wavelength higher and shorter than that of the incident radiation.

Raman didn't waste any time. That Friday, March 31,1928, he and Krishnan published another letter in *Nature,* titled, "A New Type of Secondary Radiation," which described what would later be known as the Raman effect or Raman shift.

The amount of work that Raman and Krishnan accomplished in such a short time is amazing as well. They reported in *Nature* that: "Some 60 different common liquids have been examined in this way, and every one of them showed the effect in greater or lesser degree." Equally astonishing is the speed with which the field adopted Raman's discovery. By August of the following year, there were already 150 scientific publications related to the Raman effect.

That year, 1929, Raman was nominated for the Nobel Prize in physics. But the prize went instead to Louis de Broglie for his work on the wave nature of the electron. Raman was nominated again in 1930 and, just two years after his initial experiment, he was awarded the prize at the age of 42. Although this might seem fast, it was in keeping with the wishes of Alfred Bernhard Nobel, who willed that the proceeds of his estate be "distributed in the form of prizes to those who, during the preceding year, shall have conferred the greatest benefit to mankind." It was clearly Nobel's plan to reward recent discoveries—a concept seemingly forgotten today, when it can easily take a year or longer to publish a manuscript.

Raman spectroscopy quickly became the technique of choice for conducting molecular vibrational studies. However, after World War II, it fell out of favor and was largely replaced by then-simpler infrared and near infrared spectroscopy techniques. Like the technique it inspired, the S.S. Narkunda fell on bad times. After being pressed into use as a troop carrier, it was sunk by the German Lufthansa in 1942.

Fortunately, recent instrumentation advances, including high intensity, tunable, titanium-sapphire lasers and back-thinned, liquid nitrogen cooled CCD detectors, have once again brought C.V. Raman and his "effect" to the scientific forefront. The Raman spectra we analyze today using this advanced instrumentation look little like the bands Raman and Krishnan first saw in their Calcutta laboratory. The Raman bands in these modern spectra represent a chemical fingerprint of the molecular species examined.

Raman spectroscopy had its first biomedical impact in the fields of biochemistry and biophysics, where it was used for key chemical and structural studies of DNA, lipid membranes, hemoglobin and enzymes. However, perhaps its greatest impact will be in clinical medicine. It is now being used to probe intact living cells and tissues. In fact, Raman techniques are currently being developed for painless transcutaneous monitoring of blood glucose in diabetics, identification of vulnerable atherosclerotic plaques in the coronary arteries of patients at risk for heart attacks and the real time *in vivo* diagnosis of breast cancer.

Raman spectroscopy has become a popular tool in industry; it is now used for quality control in the manufacture of starchy foods.

Notes:

- scattering - рассеивание; рассыпание; разбрасывание
- intact - нетронутый; незатронутый, неповреждённый

Task 1. Make as many derivatives for each word as you can and translate them.

Color, physics, important, vibrate, explain, reflect, depend, discover, radiate, examine, develop.

Task 2. Divide the text into its logical parts and title them.

Task 3. Find the main idea of each part.

Task 4. Explain “Raman effect” in your own words.

Task 5. Compress the text.

Task 6. Topics for discussion

1. What do you know about C.V. Raman?
2. What history of other important discoveries can you tell?

Text 10

ADDING FUEL TO THE FIRE

When the concept of biofuels first emerged, it sparked huge optimism as a source of renewable energy. This dream is far from being realized, as questions have arisen about the viability of biofuels both ethically and energetically. Despite this, the desire to overcome rising fuel costs, global warming, and dependence on politically unstable oil exporting regions has prompted ambitious moves towards increasing biofuel consumption – the EU aims to increase biofuel use in road traffic by over 1000% by 2020. Research into biofuels is ongoing, and looks set to yield positive, usable technologies, but will our premature enthusiasm for using biofuels actually do more harm than good?

At present the term 'biofuels' is usually applied to liquid transport fuels: biodiesel from vegetable oils or bioethanol fermented from sugar, starch or biomass. Most car engines can take a 15% cut in standard diesel or petrol with no modification and could be modified to run entirely on biofuel. The idea behind biofuels is simple: any carbon released when they burn should be balanced by the carbon absorbed during the growth of the plants that are their raw material, making them carbon neutral. Since there is no net change in atmospheric carbon, there should be no perturbation to our climate – so far, so good.

However, the truth is that most biofuels currently in use are not carbon neutral at all. The problem is that cultivating the plants, harvesting, transport and processing all use energy. Many liquid biofuels are based on non-structural oils and sugars, which are present in relatively low concentrations in plants, and require considerable processing. Estimates of efficiency vary widely, and are different for different types of fuel. A recent report by the UK government estimated that a 50-60% net reduction in emissions is achieved using biofuels compared with fossil fuels, but critics have claimed that some types of biofuel may even take more energy to produce than they supply.

This is far from being the only problem. Turning food crops into fuel creates financial competition between rich consumers wanting fuel and poor consumers wanting food, for both the crops themselves and the land used to grow them. This could contribute to famine in the developing world, upon whom we would be heavily dependent for biofuel production and food prices in the developed world may rise. Some proponents of biofuels claim that enough energy could be produced using present technology without compromising food security. With projected world energy requirements in 2052 likely to require 80% of the world's surface to be planted, and food demands set to double over the same period, this confidence seems utterly unfounded.

Increased crop production for biofuels will also lead to wide-scale habitat loss. This decreases biodiversity and increases emissions directly from the clearance of the natural vegetation and disruption to the soils, generating a 'carbon debt' – the number of years the fuel must be produced to 'pay back' the initial emissions from land clearance, determined by a combination of the type of fuel produced and the type of

land cleared. In terms of habitat loss and carbon debt, one of the worst offending biofuels is palm oil. Biodiesel from palm oil is cheaper than from any other crop, and palm oil export from Indonesia is set to be a major contributor to EU targets. But the expansion of oil palm plantations, replacing mature rainforest, has been an ecological disaster. Clearance often involves burning vegetation or draining peatlands, increasing Indonesia's CO2 emissions such that it is now the third highest globally. Creating palm oil plantations destroys land with some of the highest biodiversity in the world, and contributes to the loss of habitat of many animals including the orangutan, which is threatened with extinction, as it loses habitat and is also killed as a pest of the young oil palms. Like all monoculture, the plantations are vulnerable to disease which can spread easily from plant to plant across the whole area. Palm oil is not even particularly efficient to produce and use – grown on regular rainforest it has a carbon debt of 86 years, and on peat forest this rises to a massive 423 years. By increasing the market for biodiesel from palm oil, we are promoting all this destruction just to fool ourselves that we're making a difference to emissions.

Much research has been done and is ongoing to overcome these problems: avoiding dependency on food crops, and increasing the efficiency of fuel production to reduce the amount of land required. Second generation biofuels use biomass like straw, grass, and woodchips and are based on the structural compounds cellulose and lignin which are present in large amounts in plants compared with sugars and oils. This contributes to their improved efficiency – for example, a 50% reduction in emissions is achieved using ethanol produced from grasses grown on the American prairies compared to 20% from corn. They can be produced from waste material, or crops like *Miscanthus* that can be grown on marginal land, so they are likely to have a much lower impact on food security and habitat loss. To generate liquid fuels, the long-chain carbohydrates in the biomass must be made available for fermentation. This is technically difficult and requires considerable energy inputs in itself, but research is ongoing to make the process more efficient, such as investigating the processes which allow termites to digest wood.

Perhaps one of the most exciting developments in liquid biofuels has been the use of algae. The attractive thing about algae is that they are not food crops and they do not have to grow on land that could be used for food crops. Algal culture in custom-built open ponds or closed bioreactors could be sited on any land, including waste or industrial sites, marginal land or desert. Another benefit is that algae have a much higher growth rate than multi-cellular plants, making them "the most prolific energy conversion systems on the planet", and many species are able to produce long-chain hydrocarbons which need minimal processing to be used as fuel; they produce and excrete diesel. Certain varieties are also capable of producing hydrogen, which could be used as a fuel.

So, while ongoing research could uncover important players in the future energy mix, many of the currently available sources of biofuels do little to reduce emissions and could actually exacerbate problems with food security and habitat loss already caused by global warming – the very things that biofuels are trying to address. Both governments and consumers need to become aware of the difference between 'good' and 'bad' biofuels, rather than just equating 'biofuels' with 'green'. There is little

point in meeting targets when in reality they have few benefits for the environment or for people.

Notes:

- yield - приносить урожай, давать плоды; давать результат
- premature - преждевременный, ранний
- perturbation - смятение, расстройство; возмущение, нарушение спокойствия
- harvesting -уборка урожая
- crop - с-х. культура
- famine– голод
- pest - вредитель, паразит

Task 1.

A) Match the common prefixes with the correct meaning.

1. Over-	a. Too much
2. Mis-	b. Better/more than
3. Out-	c. Badly
4. Co-	d. Extremely
5. Re-	e. Former
6. Ultra-	f. Opposite
7. Ex-	g. With
8. De-	h. Too little
9. Under-	i. Again

B) Underline the odd one out in each group.

1. Under-	a. Perform /rate /charge / require
2. Co-	b. Worker /author / student / user
3. Re-	c. New / place / generate / decide
4. Over-	d. Consumption / come / increase / supply
5. Mis-	e. Understand / look/ estimate / adjust
6. Out-	f. Class / require / do / drive
7. Ultra-	g. Modern /big/ efficient / high
8. Ex-	h. President / director / year / boss
9. De-	i. Regulate / activate / motivate / process

Task 2. True or false?

1) The future of biofuels is undoubtedly optimistic.
2) The EU is going to double biofuel use in road traffic by 2020.
3) Nowadays the word “biofuel” is normally applied to liquid vehicle fuels of biological origin.

4) The term “carbon neutral” refers to the fuels that don’t produce carbon dioxide during the process of burning.
5) Biofuels based on organic oils and sugars usually require precise processing.
6) Developing countries are likely to profit from using biofuel more than the Great Powers.
7) Growing crops for fuel may result in starvation in developing countries.
8) Using biofuels may indirectly cause great ecological problems.
9) Growing raw material for biofuel on marginal land is a perspective way of granting food security.
10) According to the article, termites are thought to be a perspective component of biofuels.
11) All biofuels are “green” by default.

Task 3. Choose the correct item.

- The idea behind biofuels is simple: any carbon *relising/released* when they burn should be *balancing/balanced* by the carbon *absorbing/absorbed* during the growth of the plants that are their raw material, *making/made* them carbon neutral.

- *Turning/turned* food crops into fuel creates financial competition between rich consumers *wanting/wanted* fuel and poor consumers *wanting/wanted* food, for both the crops themselves and the land *using/used* to grow them.

- *Creating/created* palm oil plantations destroys land with some of the highest biodiversity in the world, and contributes to the loss of habitat of many animals *including/included* the orangutan, which is *threatening/threatened* with extinction, as it loses habitat and is also *killing/killed* as a pest of the young oil palms.

- Much research has been done and is ongoing to overcome these problems: *avoiding/avoided* dependency on food crops, and *increasing/increased* the efficiency of fuel production to reduce the amount of land *requiring/required*.

- This contributes to their *improving/improved* efficiency – for example, a 50% reduction in emissions is achieved *using/used* ethanol *producing/produced* from grasses *growing/grown* on the American prairies *comparing/compared* to 20% from corn

Task 4. Find the key words in each paragraph.
Task 5. Topics for discussion:

1. What pro and contra does biofuel have?
2. What different types of fuel cells do you know?
3. What do you suppose to be fuel of the future?

Part III

WRITING SUMMARIES AND REPORTS

Translators have to work with different types of literature, they often use originals in their everyday work. Sometimes they have to come across the secondary sources of information. The secondary sources are worked up according to the contents of scientific information and the aims of using the original literature.
The main secondary sources of foreign literature are:
1) Bibliographical descriptions;
2) Summaries;
3) Reports;
4) Surveys.
Each of the sources has a certain degree of information compression. The shortest source of the secondary documents is a bibliographical description. It contains the smallest quantity of information. *A bibliographical description* is a combination of pieces of information about the original work or its part which gives a general impression of the original.
It includes different parts.
The first one is a title of the original. It is written in your own language.
The second one is some information about the author or a group of them.
The next one is a date of publishing. It includes a place of publishing and the name of publishing house given in a full form.
The last one is a year of publication.
Sometimes there are some additional elements such as the number of figures and pages.
The main function of making bibliographical descriptions is to notify readers of a new source of information. Translators of technical literature have to deal with summaries and reports all the time.
A summary (an annotation) is a brief characteristic of the contents of the original or the manuscript. The main purpose of such a simplification is to highlight the major points from the original (much longer) subject, e.g. a text, a film or an event. The target is to help the audience to get the main idea in a short period of time. We will take into consideration a summary on the content of scientific literature. There are different types of summaries. They are classified according to their aims of usage and their essence. The first type is a *reference summary.* Such summaries report the theme of the original, give some facts of it and don't express any opinion of the original work. The second type is a *summary of recommendation.* These summaries estimate the original and define a suitable class of readers.
E.g. It's recommended for scientists.
It's of great interest to technicians.
There is another classification of summaries according to the quantity of the original contents.

The first kind is a *general summary.* They give some general characteristics of the original document. These summaries are written to a wide circle of readers. The second one is a *specialized summary.* They show some special aspects of the original. They are written to specialists in a variety of sciences. Summaries usually have a clearly arranged structure and they are written in a logical, chronological and traceable manner. *In contrast to a résumé or a review, a summary contains neither interpretation nor rating.* Only the opinion of the original writer is reflected – paraphrased with new words without quotations from the text. Unlike a retelling, a summary has no dramatic structure and is written in present tense or historic present. Because summaries should be significantly shorter than the original, minor facts have to be left out. However all major conclusions should remain. In summaries only indirect speech is used and depictions are avoided. Summaries of books or dissertations present the major facts in common scientific language and should be about from a half up to one page long.

A person has to do the following things to write s summary:

- To read the text attentively;
- To formulate the main statement;
- To reread the text and underline important ideas and arguments according to the main statement;
- To introduce the author and title of the work in the opening sentence;
- To mention the important facts in chronological order.

If a person is going to write a summary he has to know some requirements concerning writing them:
1) The volume of a summary is from 500 to 2000 symbols;
2) A logical structure should be kept.
It is also necessary to take the language peculiarities into consideration:

- To give the main ideas and facts of the original simply and in brief;
- To avoid repetitions;
- Not to repeat the title of the original;
- To use the same terms as in the original;
- To use the accepted abbreviations and shortenings;
- To avoid using adjectives, adverbs, introductive words a lot;
- To use word combinations helping to organize structure of summaries;
- To use key-patterns.

Each summary has a certain structure. It consists of several parts:
1. The introduction. It is the stage where a reader faces the problem.
2. The body. It expresses the main facts and problems of the original document.
3. The ending. It gives recommendations for a definite group of readers.

Usually a person begins to write a summary from the compression of information stated in the original. It’s a difficult process which consists of three main steps:
1) It’s necessary to express the main facts using the minimum of the original paper.

2) It’s necessary to follow the main ideas of the original.
3) It’s necessary to find some extra information about this problem.

The compression can be done in two ways.
The first one is a process of diminishing the quantity of the original information.
The second one is a process of keeping information completely.
The first type of compression is divided into two variants: 1) The omission of details;
2) The generalization of the rest.
The second type of compression is divided into two types as well.
The first one is a combination.

A combination is a way of organizing the text when two or more sentences are combined in one short construction where the same components are used once.
E.g. 1. It takes only one number to describe a scalar quantity. It takes several numbers to describe a scalar quantity. It takes several numbers to describe a vector quantity. It takes only one number to describe a scalar quantity and several – a vector one.
The second one is a substitution.
A substitution is a way of organizing the text when a part of the text is substituted by shorter one keeping the minimum of information of the original.
E.g. 1. He made up his mind to start the construction of another device. He decided to start…
2. The methods of multiplication of fractions in algebra are identical with those in arithmetics.
Compression of the original text is the first step of writing summaries.
The next one is making a logical plan of the text. A person looks through the text and finds the most important sentences. It’s also necessary to pay attention to the language of writing summaries. A mention should be made about key-patterns usually used while writing them. They perform different functions. The key-patterns or speech models (stereotypes) make process of communication simpler, help not to waste translator’s time and to organize his ideas better.
There is a classification of key-patterns according to their tasks. It’s built on the basis of notions. Usually there is a general notion and a lot of notions connected to them.
Key-patterns for writing summaries:
The article deals with . . .
As the title implies… the article describes …
The paper is concerned with…
It is known that…
It should be noted that…
The fact that… is stressed.
A mention should be made…
It is spoken in detail about…
It is reported that
The text gives valuable information on…
Much attention is given to…
It is shown that…

The following conclusions are drawn…
The paper looks at recent research dealing with…
The main idea of the article is…
It gives a detailed analysis of…
It draws our attention to…
It is stressed that…

Another popular form of secondary sources of information is a report or a review. *A report* is a brief interpretation of the content of the original in a written form or orally. It also has particular features:
1. It gives a reader an objective idea of the original source.
2. It presents the main facts of the original.
3. It represents some peculiarities of it.
4. It shows many questions of the original.
5. It helps to get rid of making a full translation of the text.

Written reports are documents which present specific, focused contents – often the result of an experiment, investigation, or inquiry – to a specific audience. The audience may be public or private, an individual or the public in general. Reports are used in government, business, education, and science. Reports often use persuasive elements, such as graphics, images, voice, or specialized vocabulary in order to persuade that specific audience to undertake an action. One of the most common formats for presenting reports is IMRAD: Introduction, Methods, Results and Discussion. This structure is standard for the genre because it mirrors the traditional publication of scientific research and summons the ethos of that discipline. Reports are not required to follow this pattern, however, and some do use the problem-solution format. Additional elements often used to persuade readers include: headings to indicate topics, to more complex formats including charts, tables, figures, pictures, tables of contents, abstracts, summaries, appendices, footnotes, hyperlinks, and references. Some examples of reports are: scientific reports, recommendation reports, *white papers*, *annual reports*, auditor's reports, *workplace reports*, *census reports*, *trip reports*, *progress reports*, *investigative reports*, budget reports, policy reports, demographic reports, credit reports, *appraisal reports*, inspection reports, military reports, *bound* reports, etc. With the dramatic expansion of information technology, and the desire for increased competitiveness in corporations, there has been an increase in the use of computing power to produce unified reports which join different views of the enterprise in one place. Termed **Enterprise Reporting**, this process involves querying data sources with different logical models to produce a human readable report. A computer user has to query the Human Resources databases and the Capital Improvements databases to show how efficiently space is being used across an entire corporation. Enterprise Reporting is a fundamental part of the larger movement towards improved Business Intelligence and Knowledge Management. While reports can be distributed in a printed form or via email, they are typically accessed via a corporate intranet. A **technical report** (also: **scientific report**) is a

document that describes the process, progress, and or results of technical or scientific research or the state of a technical or scientific research problem. It might also include recommendations and conclusion of the research. Unlike other scientific literature, such as scientific journals and the proceedings of some academic conferences, technical reports rarely undergo comprehensive independent peer review before publication. Where there is a review process, it is often limited to within the originating organization. Similarly, there are no formal publishing procedures for such reports. Technical reports are today a major source of scientific and technical information. They are prepared for internal or wider distribution by many organizations, most of which lack the extensive editing and printing facilities of commercial publishers. Technical reports are often prepared for sponsors of research projects. Another case where a technical report may be produced is when more information is produced for an academic paper than is acceptable to publish in a peer-reviewed publication; examples of this include in-depth experimental details, additional results, or the architecture of a computer model.

There is another classification of reports: *an informative report* and an *indicative report*.
An informative report or a *report – précis* contains all the main ideas and facts concerning with the methods of research and an equipment used in this research. It's the most popular form of a report. An indicative report shows the ideas connected with the theme of the original.
Reports can be classified according to the quantity of the literature used for making reports.
A *monograph report* is a report made on the basis of one original source.
An *illustrative report* is a report made on the basis of three or more sources.
A report has particular parts. It consists of three parts.

1) The first part is a bibliographical description of the original source. When a report contains many abbreviations or acronyms, they may be listed with their definitions before the body of the report, even though they must be explained in the text when first appearing unless they are standard units of measurement. Only standard abbreviations shall be used since non-standard abbreviations can be extremely confusing.

2) The second part is the body of the report. The body or the core of the report shall be structured according to its content and complexity. The core of report represents the main part of the document and shall permit the reader to understand its content (theory, methods, results). Topics should be presented in logical sequence. The structure of the core depends on the type of the document itself (handbook, research protocol, progress report, etc.). The instructions to authors can show different levels for titles but it is up to the author to decide how to organize it. Figures and tables essential to the understanding of the text are included in the core of the report, but when information is too detailed (i.e. many tables or figures on the same subject) as to interrupt the flow of the text, it should be presented in appendices, which may

contain also extra or supplementary materials. The text usually repeats all the data included in the tables or illustrations.

3) The third part is the additional information and notices. Appendices are not essential in every report. They can be identified by consecutive letters (Appendix A, Appendix B, etc.). They are used to present material that is necessary for completeness which can interrupt the flow of reading if inserted in the core of report or material that is not of interest for the general reader, but only for a specialist in the definite field. References in appendices are treated independently of those reported in the body of report and are listed separately at the end of each appendix. Non textual material generally defined as illustrations (tables, graphs, maps, photographs, flowcharts, drawings, etc.) plays a significant part in the presentation of concepts explained in the text and should be carefully organized. Illustrations summarize and emphasize key points, improve clarity and reduce narrative length. They are both an integral and independent part of the text. They offer some useful visual aid to the reader and are a time-saving writing tool. In the text they may be defined as:

1) Tables (logically organized sequences of numbers or words);
2) Figures (every illustrative material that is not a table).

The choice between tables or figures depends on which elements are intended to be focused (a table points out results, a graph promotes understanding of results and suggests interpretations of their meaning and relationships; graphs shall be used as an alternative to tables with many entries without duplicating data in graphs and tables). Non textual material should be limited to that supporting the text and pertinent for the understanding of the study described. Each item can be numbered consecutively (Table 1, Figure 1) in the order of its first citation in the text, followed by a brief title. Illustrations can be cited in the text and placed soon after their citation (and not before) or included in appendices if they are so detailed as to interrupt the flow of reading. If data included in illustrations are from other published sources, permission can be obtained by the copyright owner (except for documents in the public domain) and the original source shall be fully acknowledged. Use of colours for illustrations should be checked carefully. Tables are used when the attention of the reader is focused on data and not on trends of data. They capture information concisely, and display it efficiently; they also provide information at any desired level of detail and precision. Including data in tables rather than text frequently makes it possible to reduce the length of the text. Oversized tables should be avoided. A table is a matrix containing rows and columns of data which must be homogeneous. Each column has a short heading guiding the reader in understanding the table content; each cell must contain data (in case of missing data it can be indicated by special marks or letters). Authors should place explanatory matter in footnotes (not in the heading), which might contain also the explanation of non standard abbreviations. Figures usually include relevant information needed for evidence, efficacy or emphasis. They should be made as self-explanatory as possible using legends, when necessary. Figures are suitable for printing (i.e. either professionally drawn and

photographed, or produced as photographic quality digital prints in JPEG or GIF formats). Although some organizations may help authors of technical reports to redraw figures, in most cases there is no editorial support and authors should be aware that the final printing quality depends on that of their original figures. Letters, numbers, and symbols should therefore be clear and even throughout. If photographs of people are used, either the subjects must not be identifiable or authors must obtain a written permission to use the photographs.

The text of the report has three parts:
1. The introduction. It shows the aim, the main tasks and the methods of research. It provides the context or background for the study and should state purposes, basic procedures, main findings, and principal conclusions. It emphasizes new and important aspects of the study or observations.
2. The descriptive part. It gives data of the subject of research, of its characteristics and peculiarities. It begins from the main idea of the original.
3. The conclusions. They give the results of research and represent the main deductions. Sometimes deductions of the writer are not represented. Conclusions represent the clear presentation of the deductions made after full consideration of the work reported in the core of the report. They may include some quantitative data, but not too many details. They may also contain recommendations for further actions as a direct result of the study described.

There are some rules for making reports:
1. The length of the report depends on the original source and is about 1/8 of information of the text.
2. Reports don't represent a lot of proofs and discussions.
3. They don't express person's estimation and his own opinion just fixes the information of the original.
4. Information is given briefly due to usage of terminological vocabulary, tables, figures, formulae.
5. The style of the original is kept. It means the necessity of using authour's language.
6. You should keep the simplicity of the interpretation.
7. It is necessary to keep the subject narrow.
8. Copying a sentence you should do it exactly using quotation marks around it.
9. It is necessary to interpret authour's ideas in logical order.
10. There are a lot of tables in technical reports.
11. A lot of key-expressions are used for writing reports.

Key-expressions for writing reports:
1) The general characteristic of the article is …
2) The paper (article) under discussion is intended to describe ….
3 The article is intended to explain the advantages of …
4) The paper under discussion is intended to examine …
5) The article surveys …

6) The tasks of the author …
7) The author outlines …
8) The author points out …
9) The writer reviews the problems of …
10) The authors review …
11) The value of the results …
12) The results obtained confirm…
13) The results show the importance of the problem of ...
14) The results lead to …
15) The paper summarizes…
16) In summing up to author…
17) At the end of the article the author sums up…

While making reports people should follow the definite sequence of actions:
1. You look through the text quickly to catch the main ideas.
2. Then you read the text more attentively to understand unfamiliar words according to the context or using a dictionary.
3. Then you analyze the text and divide your material into groups:
   a) The main facts which are necessary to reprint in your report;
   b) Secondary information interpreted in brief;
   c) Unnecessary information.
4. You organize your ideas clearly beginning from making the plan of your report.
5. You end up your report with the bibliography.

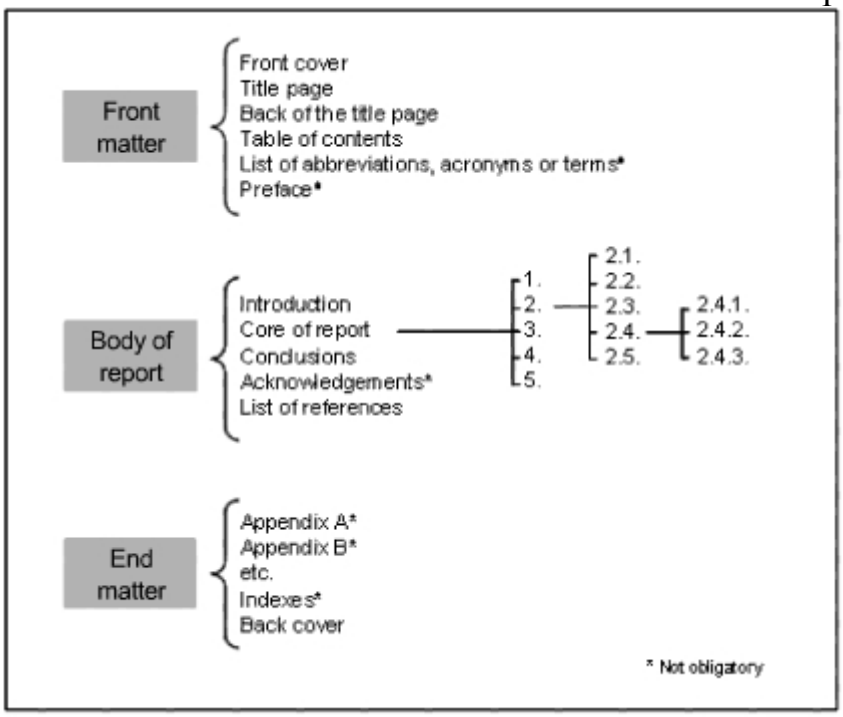
While writing your bibliography keep a record of their titles.
E. g. 1) (book) Henderson Richard, Sea Sense, N. Y., Association Press, 2002 (you can use an abbreviation for the name of the famous cities).
2) (magazine) Emmett I, "Watch the weather and the gas", Outdoor life, volume 153, April 2004 pp 36.
3) "Motorboats", Encyclopedia American, vol. 19, pp 518-519.

If a person uses both original sources in his own language and foreign ones, he has to begin his bibliography from the sources in Russian organizing them in alphabetical order. Foreign sources of information are usually given after that.
People should avoid making typical mistakes in writing reports:
1) Not to use a lot of information of the original;
2) Not miss the main ideas and facts;
3) Not to change the facts;
4) Avoid using their own ideas;
5) Not to use a lot of adjectives and adverbs.

Reports should be easy to edit as well as easy to read and understand. Therefore producers are strongly recommended to issue instructions to guide authors in the production of a formally correct document – ready to be distributed – containing indications for formats and styles, illustrations, etc. Reports may be produced at

different levels, in some cases inside the institution there is an editorial office dealing with publications in general and therefore also with GL, in other cases reports are issued without editorial support. Instructions to authors should provide a standard report structure. Issuing organizations may also provide a checklist to help authors in the production of a correct document.

The main structure of the report



Summaries have some peculiarities and differences from reports (reviews):
1) They give very brief information of the original. They are shorter than reports.
2) They don't retell the content of the original paper.
3) They don't elucidate the quantity of facts given in the report.
4) They don't give any conclusions in comparison with reports.
5) The quantity of key-patterns is smaller in annotations than in reports.
Each person has to take into consideration a lot of things if he is going to write a summary or a report to avoid typical mistakes.

Glossary:

1. Bibliographical description – библиографическое описание
2. Summary – конспект
3. Survey – обзор
4. Reference summary – ознакомительный конспект
5. Summary of recommendation – рекомендательный конспект
6. Informative report – обзорный доклад/реферат
7. Indicative report – демонстративный доклад/ реферат
8. Monograph report – монографический реферат
8. Report – précis – резюме, краткое изложение

9. White paper – авторитетный доклад; подробный доклад
10. Annual report – годовой доклад
11. Workplace report – производственный доклад
12. Census report – отчет о результатах переписи
13. Trip report – отчет о поездке
14. Progress report – отчет о выполнении работ
15. Investigative report – отчет о следствии по делу
16. Appraisal report – отчет об оценке
17. Bound report – несвязанный отчет
18. Scientific report – научный доклад
19. Body – основная часть
20. Conclusions – выводы
21. Introduction – вводная часть
22. End matter – справочный аппарат
23. Front matter – вступительная часть

Practical tasks

Task I. Read the text "Laser lidar" and study the summary to this text.

Laser lidar

Laser-based lidar (light detection and ranging) has also proven to be an important tool for oceanographers. While satellite pictures of the ocean surface provide insight into overall ocean health and hyperspectral imaging provides more insight, lidar is able to penetrate beneath the surface and obtain more specific data, even in murky coastal waters. In addition, lidar is not limited to cloudless skies or daylight hours.

"One of the difficulties of passive satellite-based systems is that there is water-surface reflectance, water-column influence, water chemistry, and also the influence of the bottom", said Chuck Bostater, director of the remote sensing lab at Florida Tech University (Melbourne, FL). "In shallow waters we want to know the quality of the water and remotely sense the water column without having the signal contaminated by the water column or the bottom".

A typical lidar system comprises a laser transmitter, receiver telescope, photodetectors, and range-resolving detection electronics. In coastal lidar studies, a 532-nm laser is typically used because it is well absorbed by the constituents in the water and so penetrates deeper in turbid or dirty water (400 to 490 nm penetrates deepest in clear ocean water). The laser transmits a short pulse of light in a specific direction. The light interacts with molecules in the air, and the molecules send a small fraction of the light back to telescope, where it is measured by the photodetectors.

Abstract (Summary)..

Laser lidar. "Laser Focus World", 2003, v 46, №3, p45.

The text focuses on the use of laser-based lidar in oceanography.

The ability of lidar to penetrate into the ocean surface to obtain specific data in murky coastal waters is specially mentioned.

Particular attention is given to the advantage of laser-based lidars over passive satellite-based systems is obtaining signals not being contaminated by the water column or the bottom.

A typical lidar system is described with emphasis on the way it works.

This information may be of interest to research teams engaged in studying shallow waters.

Task II. Read the texts and write summaries according to the given one.

Text 1

Artificial Intelligence at Edinburgh University: a Perspective

Jim Howe

Revised June 2009.

Artificial Intelligence (AI) is an experimental science whose goal is to understand the nature of intelligent thought and action. This goal is shared with a number of longer established subjects such as Philosophy, Psychology and Neuroscience. The essential difference is that AI scientists are committed to computational modelling as a methodology for explicating the interpretative processes which underlie intelligent behaviour, that relate sensing of the environment to action in it. Early workers in the field saw the digital computer as the best device available to support the many cycles of hypothesizing, modelling, simulating and testing involved in research into these interpretative processes. They set about the task of developing a programming technology that would enable the use of digital computers as an experimental tool. Over the first four decades of AI's life, a considerable amount of time and effort was given over to the design and development of new special purpose list programming languages, tools and techniques. While the symbolic programming approach dominated at the outset, other approaches such as non-symbolic neural nets and genetic algorithms have featured strongly, reflecting the fact that computing is merely a means to an end, an experimental tool, albeit a vital one.

The popular view of intelligence is that it is associated with high level problem solving, i.e. people who can play chess, solve mathematical problems, make complex financial decisions, and so on, are regarded as intelligent. What we know now is that intelligence is like an iceberg. A small amount of processing activity relates to high level problem solving, that is the part that we can reason about and introspect, but much of it is devoted to our interaction with the physical environment. Here we are dealing with information from a range of senses, visual, auditory and tactile, and coupling sensing to action, including the use of language, in an appropriate reactive fashion which is not accessible to reasoning and introspection. Using the terms symbolic and sub-symbolic to distinguish these different processing regimes, in the early decades of our work in Edinburgh we subscribed heavily to the view that to

make progress towards our goal we would need to understand the nature of the processing at both levels and the relationships between them. For example, some of our work focused primarily on symbolic level tasks, in particular, our work on automated reasoning, expert systems and planning and scheduling systems, some aspects of our work on natural language processing, and some aspects of machine vision, such as object recognition, whereas other work dealt primarily with tasks at the sub-symbolic level, including automated assembly of objects from parts, mobile robots, and machine vision for navigation.

Much of AI's accumulating know-how resulted from work at the symbolic level, modelling mechanisms for performing complex cognitive tasks in restricted domains, for example, diagnosing faults, extracting meaning from utterances, recognising objects in cluttered scenes. But this know-how had value beyond its contribution to the achievement of AI's scientific goal. It could be packaged and made available for use in the work place. This became apparent in the late 1970s and led to an upsurge of interest in applied AI. In the UK, the term Knowledge Based Systems (KBS) was coined for work which integrated AI know-how, methods and techniques with know-how, methods and techniques from other disciplines such as Computer Science and Engineering. This led to the construction of practical applications that replicated expert level decision making or human problem solving, making it more readily available to technical and professional staff in organisations. Today, AI/KBS technology has migrated into a plethora of products of industry and commerce, mostly unbeknown to the users.

History of AI at Edinburgh

The Department of Artificial Intelligence can trace its origins to a small research group established in a flat at 4 Hope Park Square in 1963 by Donald Michie, then Reader in Surgical Science. During the Second World War, through his membership of Max Newman's code-breaking group at Bletchley Park, Michie had been introduced to computing and had come to believe in the possibility of building machines that could think and learn. By the early 1960s, the time appeared to be ripe to embark on this endeavour. Looking back, there are four discernible periods in the development of AI at Edinburgh, each of roughly ten years' duration. The first covers the period from 1963 to the publication of the Lighthill Report by the Science Research Council in l973. During this period, Artificial Intelligence was recognised by the University, first by establishing the Experimental Programming Unit in January 1965 with Michie as Director, and then by the creation of the Department of Machine Intelligence and Perception in October 1966. By then Michie had persuaded Richard Gregory and Christopher Longuet-Higgins, then at Cambridge University and planning to set up a brain research institute, to join forces with him at Edinburgh. Michie's prime interest lay in the elucidation of design principles for the construction of intelligent robots, whereas Gregory and Longuet-Higgins recognized that computational modelling of cognitive processes by machine might offer new theoretical insights into their nature. Indeed, Longuet-Higgins named his research group the Theoretical Section and Gregory called his the Bionics Research Laboratory. During this period there were remarkable achievements in a number of

sub-areas of the discipline, including the development of new computational tools and techniques and their application to problems in such areas as assembly robotics and natural language. The POP-2 symbolic programming language which supported much subsequent UK research and teaching in AI was designed and developed by Robin Popplestone and Rod Burstall. It ran on a multi-access interactive computing system, only the second of its kind to be opened in the UK. By 1973, the research in robotics had produced the FREDDY II robot which was capable of assembling objects automatically from a heap of parts. Unfortunately, from the outset of their collaboration these scientific achievements were marred by significant intellectual disagreements about the nature and aims of research in AI and growing disharmony between the founding members of the Department. When Gregory resigned in 1970 to go to Bristol University, the University's reaction was to transform the Department into the School of Artificial Intelligence which was to be run by a Steering Committee. Its three research groups (Jim Howe had taken over responsibility for leading Gregory's group when he left) were given departmental status; the Bionics Research Laboratory's name was retained, whereas the Experimental Programming Unit became the Department of Machine Intelligence, and (much to the disgust of some local psychologists) the Theoretical Section was renamed the Theoretical Psychology Unit! At that time, the Faculty's Metamathematics Unit, which had been set up by Bernard Meltzer to pursue research in automated reasoning, joined the School as the Department of Computational Logic. Unfortunately, the high level of discord between the senior members of the School had become known to its main sponsors, the Science Research Council. Its reaction was to invite Sir James Lighthill to review the field. His report was published early in 1973. Although it supported AI research related to automation and to computer simulation of neurophysiological and psychological processes, it was highly critical of basic research in foundational areas such as robotics and language processing. Lighthill's report provoked a massive loss of confidence in AI by the academic establishment in the UK (and to a lesser extent in the US). It persisted for a decade - the so-called "AI Winter".

Since the new School structure had failed to reduce tensions between senior staff, the second ten year period began with an internal review of AI by a Committee appointed by the University Court. Under the chairmanship of Professor Norman Feather, it consulted widely, both inside and outside the University. Reporting in 1974, it recommended the retention of a research activity in AI but proposed significant organizational changes. The School structure was scrapped in favour of a single department, now named the Department of Artificial Intelligence; a separate unit, the Machine Intelligence Research Unit, was set up to accommodate Michie's work, and Longuet-Higgins opted to leave Edinburgh for Sussex University. The new Department's first head was Meltzer who retired in 1977 and was replaced by Howe who led it until 1996. Over the next decade, the Department's research was dominated by work on automated reasoning, cognitive modelling, children's learning and computation theory (until 1979 when Rod Burstall and Gordon Plotkin left to join the Theory Group in Computer Science). Some outstanding achievements included the design and development of the Edinburgh Prolog programming language by David Warren which strongly influenced the Japanese Government's Fifth Generation

Computing Project in the 1980s, Alan Bundy's demonstrations of the utility of meta-level reasoning to control the search for solutions to maths problems, and Howe's successful development of computer based learning environments for a range of primary and secondary school subjects, working with both normal and handicapped children.

Unlike its antecedents which only undertook teaching at Masters and Ph.D. levels, the new Department had committed itself to becoming more closely integrated with the other departments in the Faculty by contributing to undergraduate teaching as well. Its first course, AI2, a computational modelling course, was launched in 1974/75. This was followed by an introductory course, AI1, in 1978/79. By 1982, it was able to launch its first joint degree, Linguistics with Artificial Intelligence. There were no blueprints for these courses: in each case, the syllabuses had to be carved out of the body of research. It was during this period that the Department also agreed to join forces with the School of Epistemics, directed by Barry Richards, to help it introduce a Ph.D. programme in Cognitive Science. The Department provided financial support in the form of part-time seconded academic staff and studentship funding; it also provided access to its interactive computing facilities. From this modest beginning there emerged the Centre for Cognitive Science which was given departmental status by the University in 1985.

The third period of AI activity at Edinburgh begins with the launch of the Alvey Programme in advanced information technology in 1983. Thanks to the increasing number of successful applications of AI technology to practical tasks, in particular expert systems, the negative impact of the Lighthill Report had dissipated. Now, AI was seen as a key information technology to be fostered through collaborative projects between UK companies and UK universities. The effects on the Department were significant. By taking full advantage of various funding initiatives provoked by the Alvey programme, its academic staff complement increased rapidly from 4 to 15. The accompanying growth in research activity was focused in four areas, Intelligent Robotics, Knowledge Based Systems, Mathematical Reasoning and Natural Language Processing. During the period, the Intelligent Robotics Group undertook collaborative projects in automated assembly, unmanned vehicles and machine vision. It proposed a novel hybrid architecture for the hierarchical control of reactive robotic devices, and applied it successfully to industrial assembly tasks using a low cost manipulator. In vision, work focused on 3-D geometric object representation, including methods for extracting such information from range data. Achievements included a working range sensor and range data segmentation package. Research in Knowledge Based Systems included design support systems, intelligent front ends and learning environment. The Edinburgh Designer System, a design support environment for mechanical engineers started under Alvey funding, was successfully generalised to small molecule drug design. The Mathematical Reasoning Group prosecuted its research into the design of powerful inference techniques, in particular the development of proof plans for describing and guiding inductive proofs, with applications to problems of program verification, synthesis and transformation, as well as in areas outside Mathematics such as computer configuration and playing bridge. Research in Natural Language Processing spanned projects in the sub-areas of natural language interpretation and

generation. Collaborative projects included the implementation of an English language front end to an intelligent planning system, an investigation of the use of language generation techniques in hypertext-based documentation systems to produce output tailored to the user's skills and working context, and exploration of semi-automated editorial assistance such as massaging a text into house style.

In 1984, the Department combined forces with the Department of Lingistics and the Centre for Cognitive Science to launch the Centre for Speech Technology Research, under the directorship of John Laver. Major funding over a five year period was provided by the Alvey Programme to support a project demonstrating real-time continuous speech recognition.

By 1989, the University's reputation for research excellence in natural language computation and cognition enabled it to secure in collaboration with a number of other universities one of the major Research Centres which became available at that time, namely the Human Communication Research Centre which was sponsored by ESRC.

During this third decade, the UGC/UFC started the process of assessing research quality. In 1989, and again in 1992, the Department shared a "5" rating with the other departments making up the University's Computing Science unit of assessment.

The Department's postgraduate teaching also expanded rapidly. A masters degree in Knowledge Based Systems, which offered specialist themes in Foundations of AI, Expert Systems, Intelligent Robotics and Natural Language Processing, was established in 1983, and for many years was the largest of the Faculty's taught postgraduate courses with 40-50 graduates annually. Many of the Department's complement of about 60 Ph.D. students were drawn from its ranks. At undergraduate level, the most significant development was the launch, in 1987/88, of the joint degree in Artificial Intelligence and Computer Science, with support from the UFC's Engineering and Technology initiative. Subsequently, the modular structure of the course material enabled the introduction of joint degrees in AI and Mathematics and AI and Psychology. At that time, the Department also shared an "Excellent" rating awarded by the SHEFC's quality assessment exercise for its teaching provision in the area of Computer Studies.

The start of the fourth decade of AI activity coincided with the publication in 1993 of "Realising our Potential", the Government's new strategy for harnessing the strengths of science and engineering to the wealth creation process. For many departments across the UK, the transfer of technology from academia to industry and commerce was uncharted territory. However, from a relatively early stage in the development of AI at Edinburgh, there was strong interest in putting AI technology to work outside the laboratory. With financial banking from ICFC, in 1969 Michie and Howe had established a small company, called Conversational Software Ltd (CSL), to develop and market the POP-2 symbolic programming language. Probably the first AI spin-off company in the world, CSL's POP-2 systems supported work in UK industry and academia for a decade or more, long after it ceased to trade. As is so often the case with small companies, the development costs had outstripped market demand. The next exercise in technology transfer was a more modest affair, and was concerned with broadcasting some of the computing tools developed for the Department's work with schoolchildren. In 1981 a small firm, Jessop Microelectronics, was licensed to

manufacture and sell the Edinburgh Turtle, a small motorised cart that could be moved around under program control leaving a trace of its path. An excellent tool for introducing programming, spatial and mathematical concepts to young children, over 1000 were sold to UK schools (including 100 supplied to special schools under a DTI initiative). At the same time, with support from Research Machines, Peter Ross and Ken Johnson re-implemented the children's programming language, LOGO, on Research Machines microcomputers. Called RM Logo, for a decade or more it was supplied to educational establishments throughout the UK by Research Machines.
As commercial interest in IT in the early 1980s exploded into life, the Department was bombarded by requests from UK companies for various kinds of technical assistance. For a variety of reasons, not least the Department's modest size at that time, the most effective way of providing this was to set up a separate non-profit making organisation to support applications oriented R&D. In July 1983, with the agreement of the University Court, Howe launched the Artificial Intelligence Applications Institute. At the end of its first year of operations, Austin Tate succeeded Howe as Director. Its mission was to help its clients acquire know-how and skills in the construction and application of knowledge based systems technology, enabling them to support their own product or service developments and so gain a competitive edge. In practice, the Institute was a technology transfer experiment: there was no blueprint, no model to specify how the transfer of AI technology could best be achieved. So, much time and effort was given over to conceiving, developing and testing a variety of mechanisms through which knowledge and skills could be imparted to clients. A ten year snapshot of its activities revealed that it employed about twenty technical staff; it had an annual turnover just short of £1M, and it had broken even financially from the outset. Overseas, it had major clients in Japan and the US. Its work focused on three sub-areas of knowledge-based systems, planning and scheduling systems, decision support systems and information systems.

Formally, the Department of Artificial Intelligence disappeared in 1998 when the University conflated the three departments, Artificial Intelligence, Cognitive Science and Computer Science, to form the new School of Informatics.

Text 2
A gift of tongues

Troy Dreier
PC MAGAZINE July 2009.

1. Jokes about the uselessness of machine translation abound. The Central Intelligence Agency was said to have spent millions trying to program computers to translate Russian into English. The best it managed to do, so the tale goes, was to turn the Famous-Russian saying "The spirit is willing but the flesh is weak" into "The vodka is good but the meat is rotten." Sadly, this story is a myth. But machine translation has certainly produced its share of howlers. Since its earliest days, the subject has suffered from exaggerated claims and impossible expectations.

2. Hype still exists. But Japanese researchers, perhaps spurred on by the linguistic barrier that often seems to separate their country's scientists and technicians from those in the rest of the world, have made great strides towards the goal of reliable machine translation—and now their efforts are being imitated in the West.

3. Until recently, the main commercial users of translation programs have been big Japanese manufacturers. They rely on machine translation to produce the initial drafts of their English manuals and sales material. (This may help to explain the bafflement many western consumers feel as they leaf through the instructions for their video recorders.) The most popular program for doing this is e-j bank, which was designed by Nobuaki Kamejima, a reclusive software wizard at AI Laboratories in Tokyo. Now, however, a bigger market beckons. The explosion of foreign languages (especially Japanese and German) on the Internet is turning machine translation into a mainstream business. The fraction of web sites posted in English has fallen from 98% to 82% over the past three years, and the trend is still downwards. Consumer software, some of it written by non-Japanese software houses, is now becoming available to interpret this electronic Babel to those who cannot read it.

Enigma variations

4. Machines for translating from one language to another were first talked about in the 1930s. Nothing much happened, however, until 1940 when an American mathematician called Warren Weaver became intrigued with the way the British had used their pioneering Colossus computer to crack the military codes produced by Germany's Enigma encryption machines. In a memo to his employer, the Rockefeller Foundation, Weaver wrote: "I have a text in front of me which is written in Russian but I am going to pretend that it is really written in English and that it has been coded in some strange symbols. All I need to do is to strip off the code in order to retrieve the information contained in the text."

5. The earliest "translation engines" were all based on this direct, so-called "transformer", approach. Input sentences of the source language were transformed directly into output sentences of the target language, using a simple form of parsing. The parser did a rough/analysis of the source sentence, dividing it into subject, object, verb, etc. Source words were then replaced by target words selected from a dictionary, and their order rearranged so as to comply with the rules of the target language.

6. It sounds simple, but it wasn't. The problem with Weaver's approach was summarized succinctly by Yehoshua Bar-Hillel, a linguist and philosopher who wondered what kind of sense a machine would make of the sentence "The pen is in the box" (the writing instrument is in the container) and the sentence "The box is in the pen" (the container is in the[play]pen).

7. Humans resolve such ambiguities in one of two ways. Either they note the context of the preceding sentences or they infer the meaning in isolation by knowing certain rules about the real world—in this case, that boxes are bigger than pens (writing instruments) but smaller than pens (play-pens) and that bigger objects cannot fit inside smaller ones. The computers available to Weaver and his immediate successors could not possibly have managed that.

8. But modern computers, which have more processing power arid more memory, can. Their translation engines are able to adopt a less direct approach, using what is called "linguistic knowledge". It is this that has allowed Mr. Kamejima to produce e-j bank, and has also permitted NeocorTech of San Diego to come up with Tsunami and Typhoon - the first Japanese-language-translation software to run on the standard (English) version of Microsoft Windows.

9. Linguistic-knowledge translators have two sets of grammatical rules—one for the source language and one for the target. They also have a lot of information about the idiomatic differences between the languages, to stop them making silly mistakes.

10. The first set of grammatical rules is used by the parser to analyze an input sentence ("I read" The Economist "every week"). The sentence is resolved into a tree that describes the structural relationship between the sentence's components ("I" [subject], "read" (verb), "The Economist" (object) and "every week" [phrase modifying the verb). Thus far, the process is like that of a Weaver-style transformer engine. But then things get more complex. Instead of working to a pre-arranged formula, a generator (i.e., a parser in reverse) is brought into play to create a sentence structure in the target language. It does so using a dictionary and a comparative grammar—a set of rules that describes the difference between each sentence component in the source language and its counterpart in the target language. Thus a bridge to the second language is built on deep structural foundations.

11. Apart from being much more accurate, such linguistic-knowledge engines should, in theory, be reversible—you should be able to work backwards from the target language to the source language. In practice, there are a few catches which prevent this from happening as well as it might - but the architecture does at least make life easier for software designers trying to produce matching pairs of programs. Tsunami (English to Japanese) and Typhoon Japanese to English), for instance, share much of their underlying programming code.

12. Having been designed from the start for use on a personal computer rather than a powerful workstation or even a mainframe, Tsunami and Typhoon use memory extremely efficiently. As a result, they are blindingly fast on the latest PCs—translating either way at speeds of more than 300,000 words an hour. Do they produce perfect translations at the click of a mouse? Not by a long shot. But they do come up with surprisingly good first drafts for expert translators to get their teeth into. One mistake that the early researchers made was to imagine that nothing less than flawless, fully automated machine translation would suffice. With more realistic expectations, machine translation is, at last, beginning to thrive.

Text 3

IBM promises science 500-fold break-through in supercomputing power

David Stone

PC MAGAZINE March 8, 2009.

Biologists hail SI 00 million project to build a "petaflop" computer as likely to revolutionize our understanding of cellular biology. The computer, nicknamed 'Blue Genes', world be around 500 times faster than today's most powerful supercomputer. Computer scientists say that the planned machine, details of which were revealed last: week, is the first large leap in computer architecture in decades.

IBM will build the programme around the challenge of modeling protein folding (see below), with much of the research costs going on designing software. It will involve 50 scientists from IBM Research's Deep Computing Institute and Computational Biology Group, and unnamed outside academics.

But Blue Gene's hardware will not he customized to the problem and, if IBM's blueprint works, it will offer all scientific disciplines petaflop computers. These will be capable of more than one quadrillion floating point operations ('flop') per second - around two million times more powerful than today's top desktops. Most experts have" predicted that fundamental technological difficulties would prevent a petaflop computer being built before around 2015.

"It is, fantastic that IBM is doing this," says George Lake, a scientist at the university of Washington and NASA project, scientist for high-performance computing in Earth and space science. IBM is showing leadership by ushering in a new generation of supercomputers, he says.

The biggest-technological constraints to building a petaflop machine have been latency - increasing the speed with which a chip addresses the memory - and reducing power-consumption. A petaflop computer build using conventional chips would consume almost one billion watts of power. IBM reckons Blue Gene will use just one million-watts.

Although processor speeds have increased exponentially, the time to fetch *dm from* the memory of a supercomputer, 300 nanoseconds, is only slightly less than half what it was 20 years ago. Putting more and more transistors on a chip is therefore unlikely to lead to much greater speed.

"We set out from scratch, completely ignoring history, and thought how can we get the highest performance out of silicon," says Monty Denneau, a scientist at IBM's Thomas J. Watson research center in Yorktown Heights, New York, who is assistant architect of Slue Gene.

Arvind, a professor of computer science at Mit who is considered one of the top authorities on computer architecture, applauds IBM's approach. "It has made very big steps in rethinking computer architecture to try to do without the components that consume power, it has taken all these research ideas and pulled them together."

Task III. Write précis of the following articles.

Text 1
Antiviruses. Principle of work. Examples of antiviruses.

Antivirus software consists of computer programs that attempt to identify, thwart and eliminate computer viruses and other malicious software (malware). Antivirus software typically uses two different techniques to accomplish this:

• Examining (scanning) files to look for known viruses matching definitions in a virus dictionary
• Identifying suspicious behavior from any computer program which might indicate infection. Such analysis may include data captures, port monitoring and other methods.

Most commercial antivirus software uses both of these approaches, with an emphasis on the virus dictionary approach.

Historically, the term antivirus has also been used for computer viruses that spread and combated malicious viruses. This was common on the Amiga computer platform.

Dictionary

In the virus dictionary approach, when the antivirus software looks at a file, it refers to a dictionary of known viruses that the authors of the antivirus software have identified. If a piece of code in the file matches any virus identified in the dictionary, then the antivirus software can take one of the following actions:
• attempt to repair the file by removing the virus itself from the file
• quarantine the file (such that the file remains inaccessible to other programs and its virus can no longer spread)
• delete the infected file

To achieve consistent success in the medium and long term, the virus dictionary approach requires periodic (generally online) downloads of updated virus dictionary entries. As civically minded and technically inclined users identify new viruses "in the wild", they can send their infected files to the authors of antivirus software, who then include information about the new viruses in their dictionaries.

Dictionary-based antivirus software typically examines files when the computer's operating system creates, opens, closes or e-mails them. In this way it can detect a known virus immediately upon receipt. Note too that a System Administrator can typically schedule the antivirus software to examine (scan) all files on the computer's hard disk on a regular basis. Although the dictionary approach can effectively contain virus outbreaks in the right circumstances, virus authors have tried to stay a step ahead of such software by writing "oligomorphic", "polymorphic" and more recently "metamorphic" viruses, which encrypt parts of themselves or otherwise modify themselves as a method of disguise, so as not to match the virus's signature in the dictionary.

Suspicious behavior

The suspicious behavior approach, by contrast, doesn't attempt to identify known viruses, but instead monitors the behavior of all programs. If one program tries to write data to an executable program, for example, the antivirus software can flag this suspicious behavior, alert a user and ask what to do.

Unlike the dictionary approach, the suspicious behavior approach therefore provides protection against brand-new viruses that do not yet exist in any virus dictionaries. However, it can also sound a large number of false positives, and users probably become desensitized to all the warnings. If the user clicks "Accept" on every

such warning, then the antivirus software obviously gives no benefit to that user. This problem has worsened since 1997, since many more nonmalicious program designs came to modify other **.exe** files without regard to this false positive issue. Thus, most modern antivirus software uses this technique less and less.

Other approaches

Some antivirus-software uses of other types of heuristic analysis. For example, it could try to emulate the beginning of the code of each new executable that the system invokes before transferring control to that executable. If the program seems to use self-modifying code or otherwise appears as a virus (if it immediately tries to find other executables, for example), one could assume that a virus has infected the executable. However, this method could result in a lot of false positives. Yet another detection method involves using a sandbox. A sandbox emulates the operating system and runs the executable in this simulation. After the program has terminated, software analyzes the sandbox for any changes which might indicate a virus. Because of performance issues, this type of detection normally only takes place during on-demand scans. Also this method may fail as virus can be nondeterministic and result in different actions or no actions at all done then run - so it will be impossible to detect it from one run. Some virus scanners can also warn a user if a file is likely to contain a virus based on the file type.

An emerging technique to deal with malware in general is whitelisting. Rather than looking for only known bad software, this technique prevents execution of all computer code except that which has been previously identified as trustworthy by the system administrator. By following this default deny approach, the limitations inherent in keeping virus signatures up to date are avoided. Additionally, computer applications that are unwanted by the system administrator are prevented from executing since they are not on the whitelist. Since modem enterprise organizations have large quantities of trusted applications, the limitations of adopting this technique rest with the system administrators' ability to properly inventory and maintain the whitelist of trusted applications. As such, viable implementations of this technique include tools for automating the inventory and whitelist maintenance processes.

Issues of concern

- The spread of viruses using e-mail as their infection vector could be inhibited far more inexpensively and effectively, without the need to install additional antivirus software; if bugs in e-mail clients, which allow the unauthorized execution of code, were fixed
- User education can effectively supplement antivirus software. Simply training users in safe computing practices (such as not downloading and executing unknown programs from the Internet) would slow the spread of viruses and obviate the need of much antivirus software.

- The ongoing writing and spreading of viruses and of panic about them gives the vendors of commercial antivirus software a financial interest in the ongoing existence of viruses. Some theorize that antivirus companies have financial ties to virus writers, to generate their own market, though there is currently no evidence for this.
- Some antivirus software can considerably reduce performance. Users may disable the antivirus protection to overcome the performance loss, thus increasing the risk of infection. For maximum protection the antivirus software needs to be enabled all the time — often at the cost of slower performance (see also software bloat).
- It is sometimes necessary to temporarily disable virus protection when installing major updates such as Windows Service Packs or updating graphics card drivers. Having antivirus protection running at the same time as installing a major update may prevent the update installing properly or at all.
- When purchasing antivirus software, the agreement may include a clause that your subscription will be automatically renewed, and your credit card automatically billed at the renewal time without your approval. For example, McAfee requires one to unsubscribe at least 60 days before the expiration of the present subscription, yet it does not provide phone access nor a way to unsubscribe directly through their website. In that case, the subscriber's recourse is to contest the charges with the credit card issuer.

History

There are competing claims for the innovator of the first antivirus product. Perhaps the first publicly known neutralization of a wild PC virus was performed by European Bemt Fix (also Bemd) in early 1987. Fix neutralized an infection of the Vienna virus. Following Vienna a number of highly successful viruses appeared including Ping Pong, Lehigh, and Suriv-3 aka Jemsalem. In January 1988, researchers in the Hebrew University developed "unvirus" and "immune", which tell users whether their disks have been infected and applies an antidote to those that have.

From 1988 onwards many companies formed with a focus on the new field of antivirus technology. One of the first breakthroughs in antivirus technology occurred in March 1988 with the release of the Den Zuk viruses created by Denny Yanuar Ramdhani of Indonesia. Den Zuk neutralized the Brain virus. April 1988 saw the Virus-L forum on Usenet created, and mid 1988 saw the development by Peter Tippett of a heuristic scanner capable of detecting viruses and Trojans which was given a small public release. Fall 1988 also saw antivirus software Dr. Solomon's Anti-Virus Toolkit released by Briton Alan Solomon. By December 1990 the market had matured to the point of nineteen separate antivirus products being on sale including Norton AntiVirus and ViruScan from McAfee.

Tippett made a number of contributions to the budding field of virus detection. He was an emergency room doctor who also ran a computer software company. He had read an article about the Lehigh virus were the first viruses to be developed, but it was Lehigh that Tippett read about and he questioned whether they would have

similar characteristics to viruses that attack humans. From an epidemiological viewpoint, he was able to determine how these viruses were affecting systems within the computer (the boot-sector was affected by the Brain virus, the .com files were affected by the Lehigh virus, and both .com and .exe files were affected by the Jemsalem virus). Tippett's company Certus International Corp. then began to create anti-virus software programs. The company was sold in 1992 to Symantec Corp, and Tippett went to work for them, incorporating the software he had developed into Symantec's product, Norton AntiVirus.

Best antivirus soft

NOD32 is an antivirus package made by the Slovak company Eset. Versions are available for Microsoft Windows, Linux, FreeBSD and other platforms. Remote administration tools for multiuser installations are also available at extra cost. NOD32 Enterprise Edition consists of NOD32 AntiVirus and NOD32 Remote Administrator. The NOD32 Remote Administrator program allows a network administrator to monitor anti-virus functions, push installations and upgrades to unprotected PCs on the network and update configuration files from a central location.

NOD32 is certified by ICSA Labs. It has been tested 44 times by Virus Bulletin and has failed only 3 times, the lowest failure rate in their tests. At CNET.com, it received a review of 7.3/10.

Technical information

NOD32 consists of an on-demand scanner and four different real-time monitors. The on-demand scanner (somewhat confusingly referred to as NOD32) can be invoked by the scheduler or by the user. Each real-time monitor covers a different virus entry point:

AMON (Antivirus MONitor) - scans files as they are accessed by the system, preventing a virus from executing on the system.

DMON (Document MONitor) - scans Microsoft Office documents and files for macro viruses as they are opened and saved by Office applications.

IMON (Internet MONitor) - intercepts traffic on common protocols such as POPS and HTTP to detect and intercept viruses before they are saved to disc.

XMON (MS eXchange MONitor) - scans incoming and outgoing mail when NODS 2 is running and licensed for Microsoft Exchange Server – i.e, running on a server environment. This module is not present on workstations at all.

NOD32 Virus Detection Alert

NOD32 is written largely in assembly code, which contributes to its low use of system resources and high scanning speed, meaning that NOD32 can easily process more than 23MB per second while scanning on a modest P4 based PC and on average, with all real-time modules active, uses less than 20MB of memory in total but the physical

RAM used by NOD32 is often just a third of that. According to a 2005 Virus Bulletin test, NOD32 performs scans two to five times faster than other antivirus competitors.
In a networked environment NOD32 clients can update from a central "mirror server" on the network, reducing bandwidth usage since new definitions need only be downloaded once by the mirror server as opposed to once for each client.
NOD32's scan engine uses heuristic detection (which Eset calls "ThreatSense") in addition to signature files to provide better protection against newly released viruses.

Text 2
What is a virus?

B. Kelley
IOWA STATE UNIVERSITY, PM 1789 Rewised June, 2010.

In 1983, researcher Fred Cohen defined a computer virus as "a program that can 'infect' other programs by modifying them to include a ... version of itself. " This means that viruses copy themselves, usually by encryption or by mutating slightly each time they copy.

There are several types of viruses, but the ones that are the most dangerous are designed to corrupt your computer or software programs. Viruses can range from an irritating message flashing on your computer screen to eliminating data on your hard drive. Viruses often use your computer's internal clock as a trigger. Some of the most popular dates used are Friday the 13^{th} and famous birthdays. It is important to remember that viruses are dangerous only if you execute (start) an infected program.
There are three main kinds of viruses*. Each kind is based on the way the virus spreads.

1. Boot Sector Viruses - These viruses attach themselves to floppy disks and then copy themselves into the boot sector of your hard drive. (The boot sector is the set of instructions your computer uses when it starts up.) When you start your computer (or reboot it) your hard drive gets infected. You can get boot sector viruses only from an infected floppy disk. You cannot get one from sharing files or executing programs. This type of virus is becoming less common because today's computers do not require a boot disk to start, but they can still be found on disks that contain other types of files. One of the most common boot sector viruses is called "Monkey," also known as "Stoned."

2. Program Viruses - These viruses (also known as traditional file viruses) attach themselves to programs' executable files. Usually a program virus will attach to an .exe or .corn file. However, they can infect any file that your computer runs when it launches a program (including .sys, .dll, and others). When you start a program that contains a virus, the virus usually loads into your computer's Memory.

*** Three kinds of viruses**

1. Boot Sector viruses attach to floppy disks and then copy into the boot sector of your hard drive.

2. Program viruses attach to a program's executable files.

3. Macro viruses attach to templates.

The truth about viruses

The majority of people believe that the most common source of viruses is the Internet through e-mail or downloaded files. The truth is, however, that the majority of viruses spread through shared floppy disks or shared files on internal network.

Even if you are not connected to the Internet you should still be concerned about viruses. You should also be aware that there are thousands of false rumors of viruses (virus hoaxes).

Part IV

Making Presentations

I. Introduction

The study of speech communication will engage you in one of the oldest academic subjects known "Rhetoric", as the ancient Greeks called it.

Rhetoric – or the art of speaking persuasively – has been one of the most important subjects on the Western European school curriculum from classical times. Classical rhetoric covers all aspects of speaking in public – choice and arrangement of material, style and delivery. In modern usage the term has been somewhat trivialised and is now often used to describe practical skills and strategies that public speakers and presenters use.

Success in many careers depends on good speech communication skills. These include careers in administration, government, public relations, politics, education, sales, and private industry.

Very often in business we find ourselves presenting at conferences and meetings. Some estimates say that over 30 million presentations are given every day. Many of these presentations are given in English by non-native speakers. Many are given badly as presenters often don't know how to go about structuring a presentation or how to use English to maximum effect during a presentation. However, presentations are more important than ever in the present market-oriented climate and are an essential tool for anyone who needs to sell a business proposal, an idea, or even themselves. In business the language is used as a vehicle for the exchange of information and you need to develop certain basic skills to participate successfully in this exchange.

The dictionary definition of presentation is "an event at which a new product or idea is described and explained". It is therefore essential for students looking for employment in business to develop skills, language and techniques needed to present in public with confidence if they wish to succeed in their careers.

Presentations are high-risk, high-visibility activities. Success and failure, can have a significant effect on your career.

The ability to speak English is no guarantee that you can present in English. Presenters need presentation skills and a level of professionalism.

There are many similarities between written and spoken presentations: both are designed to communicate in an ordered way. But spoken presentations carry additional risks, because speaking to an audience takes place in real time. You cannot try different versions or go back and correct something you do not like. You cannot afford to go blank. And you have an audience there who will let you know if they do not like what you are saying.

The common factors contributing to an unsatisfactory presentation (presentational problems) are the following:

- Content inappropriate to audience (the audience know the content already; the audience don't want to know the content; the content is so muddled that it is impossible to follow)
- Pace inappropriate to difficulty (the speaker goes slowly through the obvious; the speaker rushes through complex arguments; the speaker jumbles his or her notes, and spends most of the time trying to find out where they are);
- Poor delivery (the speaker is inaudible; the speaker's voice is a hypnotic monotone);
- Poor visibility of visual aids (PowerPoint projections are illegible; half the slides are upside down or out of order; the slides are overloading)

The possible list is almost endless, but the above are common faults.

This course is devoted to showing you what is necessary if you are to avoid the risks presentations involve, and make the most of the opportunities that they offer. While it is beyond the scope of this course to turn you into a brilliant speaker, becoming good should be well within your reach. Although bad presentations abound, and you will doubtless have sat through many, the basic principles of effective presentation (presentational strengths) are remarkably simple:

- Clear structure
- Appropriate content
- Interesting delivery
- Good illustrations of points
- Audibility and visibility
- Keeping to time

By following these principles, you should be able to create a professional impression that will serve you well on your course and in your future job.

Vocabulary

go blank = be suddenly unable to remember something
muddled = not clear or effective
pace = the speed at which something happens or is done
jumble = mix things in a confusing or untidy way
be within the reach = used for saying that someone can do something

II. Analyzing your Audience

You should start preparing for your speech by looking at your future audience. Your job is to get as much information about your audience as you can. This information will help you to prepare a speech which is relevant and interesting to your listeners.

Thinking about your audience is the key to good public speaking. If you are preparing a presentation, start with the question: Who are these people? It's the key to success. Whether they are strangers or colleagues, they have one thing in common: they expect you to impress them for the next 15-20 minutes. And the best way to do so is to focus on their favourite subject – themselves. So begin by defining who these people are and what they expect. Here are ten questions to ask yourself.

1. What kind of language do these people use?
   If your audience is from a particular industry, what terminology does it understand best? The audience dictates your choice of words, but remember, you should always make your language clear and concise, especially if the language is not your mother tongue.
2. Why were you invited to make this presentation?
   Your knowledge of their problems is probably why you were invited to speak. They expect new insights, a different point of view, and ideas that they can take away and use so that they feel their time was well spent listening to you.
3. Can people hear you?
   Speak loudly enough to make your voice carry to the furthest listener. No one wants to listen to someone who mumbles and who does not speak with conviction. As a presenter, the ability to pace your speech and use your voice to create impact is the most important skill you need. You will be more effective if you are in control of your voice by your use of stress, pausing, intonation, volume, and silence.
4. How should you look at the audience?
   Make direct eye contact. Try convince your audience you are talking to them personally. It also makes you feel that you have made contact with them as individuals. Never talk down (or up) your audience. Treat them as equals, no matter who they are.
5. Should you use notes?
   Yes, make an outline, perhaps on small cards, and consult them as you speak. This forces you to organize your presentation in a logical, coherent way and not wander off the points.
6. Are they friends, colleagues, customers or total strangers?
   Define who these people are. Define their essential features and motivations. What work do they do, what is their level of education, what kind of language do they use, what problems and opportunities might they have? Address their goals, their needs, their concerns.
7. Does the audience appreciate humour?
   Don't make a special effort to be funny. If you make a joke, don't stop and wait for laughs. What is funny in one culture may not be in another. The subject of your presentation is probably serious and for some people, humour may be out of

place. A light touch here and there is all right but humour cannot replace good ideas.

8. Should you use any visual aids?
   If they make your speech easier to understand, yes. But make them clear and simple. Don't laboriously read out aloud what is written on your visuals. Make sure that everyone can see them, even from the back of the room.
9. How long should the presentation be?
   The best thing is to take only as much time as is necessary. The only thing worse than being long and boring is being too short and not fully understood.
10. What are the audience's feelings and opinions toward the topic of your speech?
    For the purpose of persuasive speaking it will be necessary to learn as much as possible about how they feel and why they feel that way in order to do a good job preparing your persuasive speech. You can expect your listeners to feel one of three ways about the topic you choose for your persuasive speech:

    a) They Might Agree Completely.
    If this is the case, you must choose a different topic for your persuasive speech.

    b) They Might Be Indifferent.
    Your audience may have the attitude "Who cares?" If this is the case, you must find out why they are indifferent or uninterested in the topic. In your speech you will need to convince them:
    1. to be interested in the opinion you are presenting;
    2. that it is important to consider;
    3. that they should adopt your opinion.

    c) They Might Disagree Completely.
    They have the opposite opinion from yours or one which is completely different. If this is the case, you must find out their specific reasons for disagreeing with your opinion. In your speech, you will need to convince them that their specific reasons for disagreeing with the claim you are making are not good reasons. The following Survey of Opinions Form can be used as a guide for audience analysis for the purpose of persuasive speaking.

Survey of Opinions Form

Persuasive Speech Topic:_____

General Audience Reaction to Opinion (Circle one)

Strongly disagree	Disagree	Indifferent	Agree	Strongly agree
		Uninterested		

If your audience are indifferent, they are indifferent because: (circle the reasons).

1. They don't think your topic is important.
2. They don't feel your topic affects them.
3. They have never heard of your topic.

If several of your audience disagree with your opinion you will find they probably disagree for different reasons. Ask them their specific reasons for disagreement.

List below.

1. _____
2. _____
3. _____

You must use the results of your Audience Analysis while preparing the main body of your speech. You must present support and evidence which will convince them to agree with you.

In order to persuade listeners with the "who cares" attitude, you must get them interested in your topic. You must prove that your topic is important to think about, or that it directly affects them in some way.

Example: Pretend that your persuasive speech is to convince the audience to buy water purification system for their homes. Listeners are likely to be uninterested in this topic because they don't believe it is important. However, you could tell them that the newspaper ran a story saying that the quality of water in your community is the worst in the country. Expert doctors warn that drinking this water could increase the risk of getting cancer. This type of information would certainly develop interest in your topic and get people to consider your suggestion.

In order to persuade a "hostile" listener (the one who completely disagrees with your opinion or belief), you must know the reasons of disagreeing with you and convince them that their specific reasons for disagreeing are not valid.

Vocabulary

stranger = someone whom you don't know
concise = expressed clearly using only a few words
insight = clear understanding of something complicated
mumble = to speak in a way that is not loud enough
talk down = talk to someone as if they were stupid when in fact they are not
coherent = clear and sensible
wander off = move a way
laborious = long, difficult and boring
purification = a process that removes the dirty or unwanted parts from something

valid = reasonable and generally accepted

III. Presentation Structure

Every public speech (presentation) needs a subject and a purpose. Before you can begin gathering and organizing information for your speech, you must select a topic and clearly understand its purpose. For example, your purpose might be to inform people about an unfamiliar subject, or to persuade them to change their opinion about an issue. The main purpose of speaking to inform is to present information to an audience so that they will understand and remember it.

Your goal in making an informative talk is to state your ideas as simply and as clearly as possible. The major purpose of a persuasive speech is to get others to change their feelings, beliefs, or behavior. Your goal in making a persuasive speech is to convince your listeners to do what you want them to do or to change their opinion about something to agree with your.

Presentations need to be very straightforward and logical. It is important that you avoid complex structures and focus on the need to explain and discuss your work clearly. Think about how you will organize your content. Your presentation should have a clear, coherent structure and cover the points you wish to make in a logical order. Because an audience cannot turn back the page and check what you wrote, it is very easy for them to lose the thread of your spoken argument. Structure is therefore even more important in presentations than it is in written reports, and needs to be emphasized at frequent intervals. The old advice "tell them what you are going to say, say it, and then tell them what you have said" still holds good.

An ideal structure for a presentation includes:

- a welcoming and informative introduction;
- a coherent series of main points presented in a logical sequence;
- a lucid and purposeful conclusion.

It is possible to break these three broad sections down further.

1. Introductory Section

The introduction is the point at which the presenter explains the content and purpose of the presentation. This is vitally important part of your talk as you will need to gain the audience's interest and confidence. Use the introduction to welcome your audience, explain your objectives, introduce your topic/subject, indicate the main points you will be making and how you will structure these, provide guidelines on questions, say how long you will be talking for.

Key elements of an effective introduction include:

- a positive start: "Good afternoon, my name is …" (who)
- a statement of what will be discussed: "I'm going to explore …" (why)
- a statement of the treatment to be applied to the topic (e.g. to compare, contrast, evaluate, describe): "I'll be comparing the four main principles of…" (what)

- a statement of the outcomes of the presentation: “I hope this will provide us with …” (why)
- a statement of what the audience will need to do (e.g. when they can ask questions or whether or not they will need to take notes): “I’ll pass round a handout that summarizes my presentation before taking questions at the end”. (how)

Experts in communication say that the first three minutes of a presentation are the most important. They talk about “hooks” – simple techniques for getting, the immediate attention of the audience. Here’s how the experts suggest you get the immediate attention of the audience:

1. Give them a problem to think about.
2. Begin your speech with some amazing facts.
3. Give them a story or personal anecdote.
4. Begin your speech with a well-known quotation.
5. Address the audience’s needs and concerns by telling them what benefits they will gain from listening to you.
6. Ask something and then go on to answer it yourself.

2. Main section (the body of your presentation)

Now that your listeners know exactly what you are going to talk about or what your specific persuasive topic is it is time to present your information or present support and evidence which will convince them to agree with you. Be sure to present the main parts of your speech just the way you said you would. The sequence of your main points should be directly influenced by the purpose of your presentation. Always remember that the aim is to communicate issues in manageable sections or building blocks, helping the audience to piece their understanding together as you work through your material.

After you have identified your main points, you should embellish them with supporting information. For example, add clarity to your argument through the use of diagrams, illustrate a link between theory and practice, or substantiate your claims with appropriate data.

Use the supporting information to add colour and interest to your talk, but avoid detracting from the clarity of your main points by overburdening them with too much detail.

Make your presentation easy to comprehend by using sequence words (firstly, finally, etc.) Use them to connect your ideas and give structure to the whole argument.

When presenting orally, you will need to give additional pointers to internal structure within your main body. When you have finished dealing with one point, signal this by a brief summary, of the point just made, and then a short statement of the point you are about to start. You can do this easily and effectively, using simple phrases as “signposts” (transitions or sequencers) to help the audience negative their way through your presentation. They can help divide information up into subsections,

link different aspects of your talk and show progression through your topic. Importantly, transitions draw the audience's attention to the process of the presentation as well as the content.

3. Conclusion

The conclusion is an essential though frequently underdeveloped section of a presentation. This is the stage at which you summarize your key points and purpose of your talk, again using visual aids if appropriate, emphasize your recommendations or conclusion, thank your audience, and invite questions. The summary should not be too long as you will lose your audience's attention, but detailed enough to cover your points. A good summary reminds your audience about what you said and helps them to remember your information. After a summary, you are ready to conclude with a statement that will leave your audience thinking about what you said. Never end abruptly or by saying "That's all". The final words of your speech are the ones your audience will remember. Important elements of a conclusion are:

- A review of the topic and purpose of your presentation: ''In this presentation I wanted to explore …."
- A statement of the conclusions or recommendations to be drawn from your work: "I hope to have been able to show that the effect of …"
- An indication of the next stages (what might be done to take this work further?): "This does of course highlight the need for further research in the area of …"
- An instruction as to what happens next (questions, discussion or group work): "I would now like to give you the opportunity to ask questions …"
- A thank-you to the audience for their attention and participation: "Thank you very much for listening".

The techniques for concluding speeches are the same as those for beginning speeches.

4. Putting your speech together

The question is "which part of a speech do you prepare first?" You should begin with the body of your speech. After the body is prepared, you should write the conclusion, and finally the introduction.

Step one: Preparing the Body of Your Speech.

The body of your speech will contain the outline of the major ideas you want to present. It will also have the evidence or information that supports and clarifies your ideas.

First: List the main headings or subtopics related to your subject.

Write down the main headings which might be included in your speech. Write them as you think of them. Some ideas will be important, some will be insignificant. At this time, just concentrate on writing all the ideas you can think of that relate to the subject and purpose of your speech.

Second: Narrow down your list of main headings.

Review your list of main headings carefully.

Your goal should be to come up with three of four main headings that will develop the subject and purpose of your speech. The bad presentations are where people have tried to give too much information in too much detail and taken too long over it.

Third: Order your main headings logically.
Try to organize your main headings so that each major point leads naturally into the next one. For example, if your speech were entitled "Applying for a Job", you would not talk about the actual interview before discussing the need for a résumé.
A more logical order of main headings might be:

1. Finding the Desired Position
2. Writing a Résumé
3. Scheduling Appointments
4. Behavior During the Personal Interview

Fourth: Develop Your Main Headings.
The main headings are the skeleton upon which your speech will be built. You must develop and support them. If the main headings are properly supported by factual information, logical proof, and visuals, your audience will understand and remember your speech.

Step Two: Preparing the Conclusion of Your Speech.

When you have finished dealing with the main body, signal clearly that you are now ready to finish your presentation. Make sure you give a clear logical finish making your summary, giving your conclusion and making your closing remarks. Your conclusion section should follow naturally from your main body.

Step Three: Preparing the Introduction to Your Speech.

This is a crucial part of your presentation. It serves as a useful orientation to the reader.

5. Outlining

When you have gathered enough information to prepare the introduction, body and conclusion of your presentation, you are ready to organize it through the use of an outline – that is, a detailed plan of your presentation.

1. The purpose of an outline

1. An outline assures that you have organized your ideas.
2. An outline helps you remember all your information.
3. An outline makes it easy for you to deliver your speech.
4. An outline helps you to stick to the subject of your speech.

2. Preparing an outline

When you write an outline, you list very briefly and in the proper order the ideas you wish to include in your presentation. Then, you write the presentation following the outline. If your outline is well arranged, your presentation will be well arranged.

The key to outlining is to identify main topics and break them down into subtopics. A good outline meets three basic requirements:

1. Each idea must relate to and help prove the main point.
2. Each unit of the outline should contain only one idea.
3. Ideas should not be repeated or overlap each other (express the same ideas).

For topic division, use Roman numerals (I, II, III, and so forth). For subdividing a topic, use capital letters, (A,B,C, and so forth, indenting them evenly. If you want to subdivide still more, use Arabic numerals (1,2,3, and so forth) and indent again. For even more subdivision, indent again and use lower-case letters (a,b,c, and so forth). Place a period after each number of letter.

The form for an outline is as follows:

I. _____
  A._____
  1._____
  a._____
  b._____
  2._____
  B._____
  1_____
  2_____
  a._____
  b._____
  3_____
II._____
  A.
  B.
  C.

3. Two different kinds of Outline

There are two kinds of outline: a topic outline and a sentence outline. Topic outline is the most common form of an outline.

The topic and subtopics are noted in brief phrases or single words and are numbered and lettered consistently. No punctuation is needed after the topic in a topic outline.

Sample topic outline.

Managing the Multibusiness corporation

I.The structure of the Multibusiness Company.
  A. The theory of the M-Form.
  B. Problems of Divisionalized Firms.

II. The role of Corporate management.

III. Managing the Corporate Portfolio

A. Portfolio Planning
   1. The GE/Mekinsey Matrix
   2. BCG's Growth-Share matrix
B. Value Creation Through Corporate Restructuring.

In a sentence outline, each head or subhead is a complete sentence. Each sentence in a sentence outline must end with a period or a question mark.

4. Sample Outline

The following is a sample outline of an informative speech. It has all the important parts that have been described above.

Stage fright

Introduction

Can you guess what famous dancers, singers, actors, politicians, and executives have in common with us-students in a speech class? I'll tell you. It's called stage fright.

Preview of what you are going to talk about.

This is something we all have in common. Today we will be learning four major points about stage fright.

First: Some different symptoms of stage fright.
Second: The causes of stage fright.
Third: Famous people who had stage fright.
Fourth: What can be done about it.

Transition to main body: *Stage fright affects everyone differently.*

Main body of Speech.

I. Symptoms of stage fright.
   A: Some people say their heart pounds faster than normal.
   B: Others tell how their hands begin to shake.
   C: Some people claim that their legs feel week.

Transition: *Although the symptoms of stage fright might vary for all of us, its causes are quite simple.*

II. Reasons for stage fright.
   A: Many people worry that they'll forget what they want to say.
   B: Others are afraid that they'll look silly.
   C: Some people think the audience won't like them.
   D: International students might worry that their English isn't very good.

Transition: *You'll be pleased to know that if you get stage fright, you are in a very good company.*

III. Famous people have admitted to stage fright.
   A: Winston Churchill once said that he thought there was a block of ice in his stomach each time he made a speech.

B: Julio Iglesias has revealed in interviews that he is nervous about his pronunciation when speaking English.

Transition: *Although you might feel better knowing that even the rich and famous get stage fright, you're probably wondering what can be done about it.*

IV. What can you do about a stage fright?

A: Be thoroughly prepared and practice many times before a presentation.

B: Take your time before you start to speak.

C: Remember that stage fright is normal.

D: Remember that your listeners are your friends, they want you to do well.

Transition to Summary: *I hope you have learnt some new things about stage fright today*.

Summary of what you spoke about

You should now understand four major points about stage fright: its symptoms, its causes, famous people who have had it, and what you can do about it.

Conclusion

The next time you feel nervous about making a speech just tell yourself "I know my stuff and I'll do great!"

Vocabulary

lucid = describing things in a clear and simple way
embellish = make something more interesting by adding things to it
substantiate = provide evidence that proves something
overburden = overload
abruptly = suddenly and unexpectedly

IV. Exploiting Visual Aids

If you have a lot of complex information to explain, think about using some charts, diagrams, graphs on an overhead projector or flipchart.

There are some things that can be conveyed far better visually than by words alone. Relationships can be more clearly diagrammed, trends clearly shown via graphs. If your presentation is a lengthy one it is worth varying your aids. You may wish to use a mix of diagrams: some could be on prepared slides, others drawn on a board or flipchart at an appropriate point in your talk. Handouts that you want people to look at while you talk, such as a detailed table that you wish to discuss at length, can usually be distributed as people take their seats. When you give a presentation in a foreign language, visuals are essential for effective communication. It is therefore important for students if they wish to succeed in their careers to develop skills in interpreting information presented in visual aids.

1. Reasons to use Visuals

- Present specific information that can be readily understood and remembered.

- Emphasize important facts and figures.
- Present supporting data that are helpful in making analysis and drawing conclusions.
- Reduce the amount of talking you have to do.
- Add interest to the material.

2. Guidelines about using visual aids to maximum effect.

1. Your visual aids must be large enough for everyone to see.
2. Keep charts, maps and graphs very simple. Don't try to show too many details in one visual aid. Let your visuals speak for themselves. A good visual is like a good newspaper headline-it should make people want to find out more.
3. Do not pass out objects or papers during your speech. If people are looking at objects or reading papers, they will not be listening to what you are saying.
4. When describing very detailed visual aids don't quote precise figures. Give approximate figures and point out the overall trends and developments. Include precise figures and detailed descriptions in a handout or report given out before or after your talk.
5. Look at your audience – not at your visual aids. When you are showing a picture, graph, etc., be sure to maintain eye contact with your listeners.
6. Never compete with your visuals. When showing a visual, keep quiet and give people time to take it in, then make brief comments only.
7. When you've finished using your visual aids, put them away or switch off your projector.
8. If you are giving a presentation with Power Point or something of that nature, make the information on your screen very simple. The rules of presentation are the same all the time. ***Five words per line, five lines per slide, five slides per presentation is the target***.

3. Using PowerPoint

Computers make it remarkably easy to produce impressive overheads, usually using PowerPoint. It offers a number of significant advantages, particularly professional appearance, and flexibility. You can revise your presentation at the last minute, and easily tailor it to a particular audience. You can incorporate relevant tables and graphics. If you are carrying your laptop anyway you do not need to carry anything additional. PowerPoint is a tool you can use to communicate your ideas effectively through visual aids that look professionally designed yet are easy to make. You can produce slides for your presentation and room for notes, at the press of a button print audience handouts, print an outline. These advantages are clear. There are less obvious, but perhaps more serious, hazards with PowerPoint. The ease of generating slides on a computer leads some presenters to use far too many slides so that their audience retains nothing but a blurred impression of an endless series of

visuals which they have had no time to absorb. Now that everyone can use PowerPoint, being expert in its use is less impressive than once it might have been. Remember that you are trying to communicate effectively. Be selective and use slides when you need to.

4. Comprehension of Visual presentations

Here we will consider tables and four different kinds of diagram: pie charts, bar charts, Gantt charts and graphs.

a. Tables

A collection of figures can often best be communicated by means of tables.
The table below shows the results of a survey to find out what members of a city sports club think about the club's activities, facilities and opening hours.

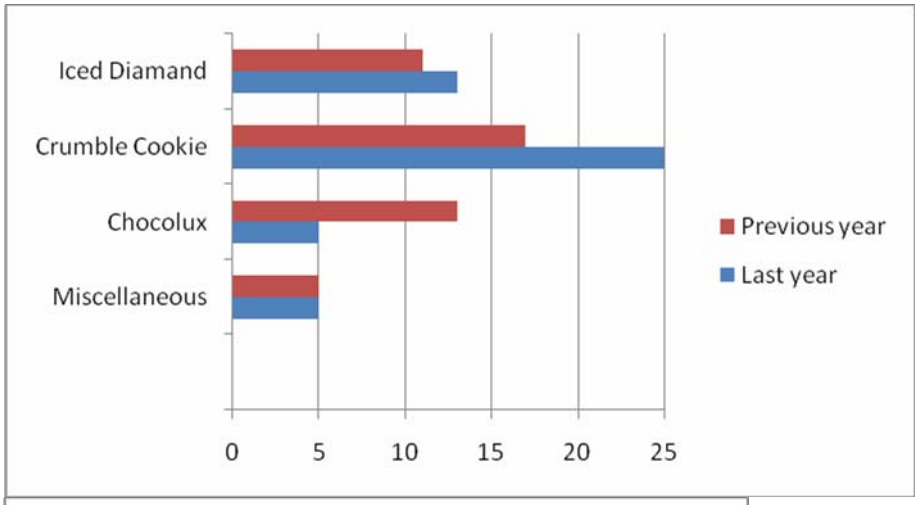
Range of activities	Very satisfied	Satisfied	Not satisfied
Female members	35%	35%	30%
Male members	55%	40%	5%
Club facilities			
Female members	64%	22%	14%
Male members	63%	27%	10%
Opening hours			
Female members	72%	25%	3%
Male members	44%	19%	37%

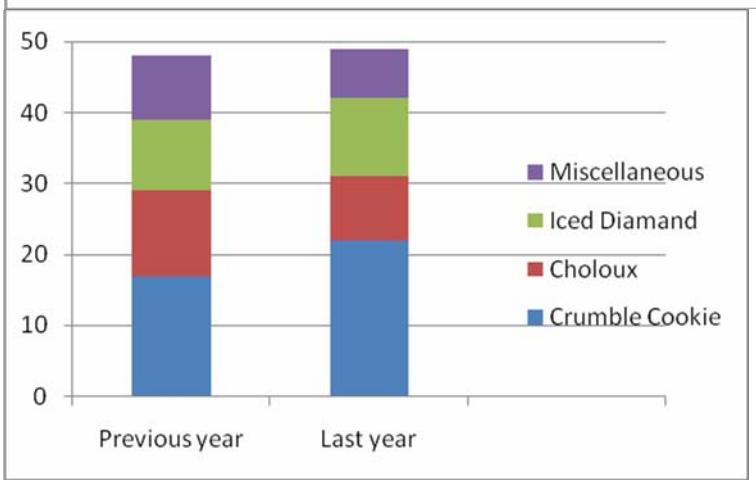
b. Pie charts

Statistics that are reported in percentages are often presented in what is called a pie chart, in which the complete "pie" represents 100 percent. The distinctions can be heightened by shading or colouring the different segments of the pie. The pie chart shown below indicates the government expenditure (%).

c. Bar charts

Another way of expressing data visually is by means of bar charts. To show data in the form of bar charts, the bar charts are drawn to scale and measured from the base line which may be horizontal or perpendicular. The following bar charts show the sales of the different product lines of the company (Delta Food Products) over the past year.
Horizontal bars

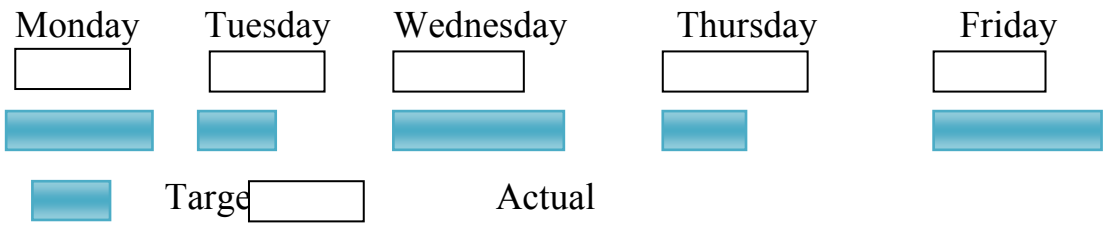




The perpendicular bar chart is also a "composite" bar chart because it includes a breakdown of the individual products in each bar.

d. Gantt charts

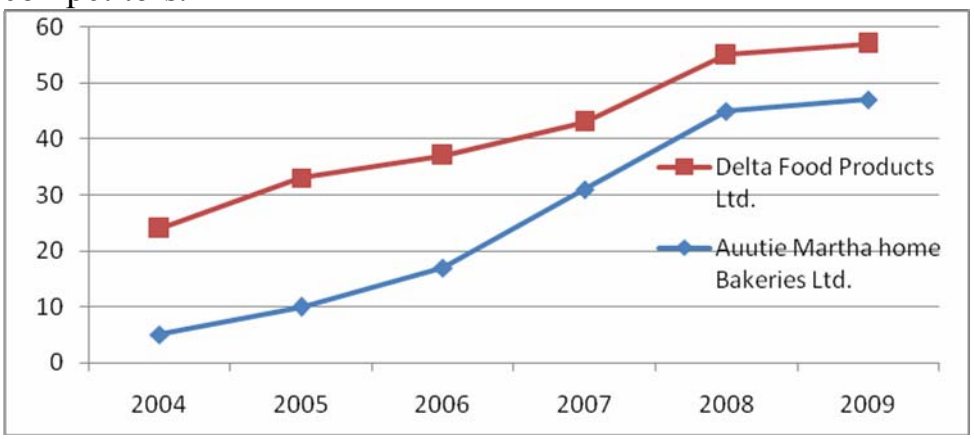
A variation of the bar chart is the Gantt chart, used in connection with the process of control in a business. It gives an instant visual comparison between expected and actual performance. The example below shows the production level (target) and the output achieved (actual) on the production line. The chart would provide information for the line managers who could see at a glance whether the targets were being met.



e. Graphs

The most common form of visual presentation is the graph. Graphs are two-dimensional. The x-axis records one dimension, usually the time dimension. The y-

axis records another range of data which changes in relation to the time (or other) series. The unbroken line in the graph below shows the sales of Delta Food Products over the past six years. The broken line shows the sales of one of Delta's major competitors.



The benefit of all these diagrammatic representations is that they present the data in an easily assimilable form. Those who are involved in the business need to be able to interpret data presented to them in whatever form.

Vocabulary
tailor = change or make something for a particular purpose
incorporate = to add or include
hazard = danger, risk
blurred = unclear

VII. Suggestions for Delivering Your Presentations

Your speech is more than just the words you use.
HOW you say something is just as important as WHAT you say.
Good delivery involves several important aspects. The following basic techniques for delivering a speech will help you to improve your own individual style of public speaking.

1. Stage fright: First, let's face one problem about speaking in public which concerns most beginning students-nervousness. Most people are nervous about public speaking. The good news is that you can learn to control your nervousness rather than let it get you down. How will you be able to reduce your nervousness? The best is to be really well prepared. If you know that your topic is interesting, and that your material is well organized, you have already reduced a major worry!
2. Eye contact: You should not look at the floor or out the window because this will give the audience the idea that you are not interested in your topic or in them. The idea is to give the impression that you are talking to each individual in your audience. You will find that if you look directly at your audience, their nods, gestures, and smiles will let you know that they understand you. This positive feedback will make you feel better and less nervous.

3. Speak with enthusiasm: Enthusiasm is being lively and showing your own personal concern for your subject and your audience. If you are truly interested in your topic, your delivery is certain to be enthusiastic and lively.
4. Vary your speaking rate: Your words should not be too fast or too slow. If you speak too slowly you will bore your audience. If you speak too rapidly you will be difficult to understand. Adapt your rate to the context of your speech. For example, if you are explaining complex information, slow down. If you are enthusiastic, you should speed up. This change of pace is very important.
5. Make it easy for people to understand: Speak clearly, without gabbling. Use short sentences and straight forward language. Use the sorts of words and phrases you use for speaking, not those you would use in writing (the large difference between the two explains why it is so difficult to follow a speaker who is reading)
6. Try to be interesting: Use visual aids to sustain interest, and vary your pace. Relevant jokes can be effective if used sparingly. Avoid jokes completely if you have any doubts about your skill in telling them.
7. Use detail sparingly: If detail is important, have a written handout for distribution before or after (not during) your presentation. Handouts distributed during your talk will lose you your audience.
8. Keep any notes brief: It is reassuring to have notes, especially if you are nervous. But keep them brief, and number them clearly so that if you do drop them in your anxiety, or they mysteriously rearrange themselves, you can reorder them easily. Cards are easiest to handle. Mark the point at which you will be using visual aids to what is appropriate. The ease of generating slides on a computer leads some presenters to use far too many slides. There is a risk of giving a very dull presentation, and talking to your computer screen rather than your audience.
9. Avoid over-running the stated time: Not keeping to your allotted time is a sure sign of ineffectiveness. Audiences plan their time, and do not like to have these plans disrupted.
10. Practice: You know now the basic principles of effective delivery and should realize that the actual delivery of your presentation is just as important as having a well-organized and developed speech. However, studying this information won't guarantee an effective speech presentation. You must rehearse and practice the speech you have prepared. For best results, you should begin practicing days before your actual presentation.

As already suggested (see point 5), you should pay attention to the use of language in your presentation in terms of the clarity of communication. Short words and short sentences will almost certainly make your presentation clearer.
Look at the differences in style between the following two sentences. Note how complicated abstract language can be replaced by simple words so that the message is expressed more clearly.

"In order to improve the performance of employees and ensure that their working practices are as efficient as is humanly possible, a manager needs to make sure that they have adequate and sufficient training to undertake the tasks assigned to them".
The sentence can be rewritten in the following way:
"If employees are to work efficiently, a manager must train them properly".

Vocabulary
get you down = make you feel unhappy
gabble = talk very quickly in a way that is difficult for people to understand
sustain = make something continue
sparingly = using or giving only a little of something
allotted = given officially for a particular purpose

VIII. Practice Section

Objective: to develop presentation skills
Strategy Point:

- Use the Phrase Bank as a study resource (Helpfile 5)
- Follow the checklists for the stages of presentations (Helpfile 4) to help you structure the presentation well and to evaluate it.
- Use the worksheet in preparation of your full presentation (Helpfile 3)

Contents:
I. Introduction
II. The main body
1. Signposting
2. Developing an argument
3. Preparing visual aids
III.Conclusion

I. Introduction

Exercise 1. Look at the relevant section of the Phrase Bank. Choose the expressions you would feel more comfortable using and highlight them. Learn them by heart. If you learn the expressions by heart, you will be able to use them automatically and, therefore, confidently.
Exercise 2. This is what the American writer Steven Silbiger writes about presentations (or public speaking) in his book, The Ten Day MBA, The Mini-Course On Public Speaking.

1. Know your audience.	Their interests, attention span
2. Know your own capabilities.	Can you deliver a joke?
3. Keep it simple.	Detailed information is best delivered in print.
	Speeches should deliver concept and motivate.

According to Steven Silbiger, are the following true or false?

2. You shouldn't allow the audience to influence what you say.

a. True
b. False

2. You should always use humour in your presentation.

a. False
b. True

3. Presentations should be about ideas.

a. True
b. False

4. There should always be lots of facts and figures.

a. False
b. True

5. Presentations should inspire people.

a. True
b. False

Exercise 3.

a. Read the advice about speaking in public given by Carol Stewart from the communications training company Speakwell.

b. Write down key words

c. What do you think is the most useful advice?

Tips for speaking in public

The key to being a good speaker

_____

_____

The presentation itself

1. _____
2. _____
3. _____
4. _____

How to cope with nerves

1. _____
2. _____
3. _____

Telling jokes

_____

The most important moment/ main advice

_____

_____

_____

First I'd say that the key to being a successful public speaker is to put yourself in the position of the audience. When a presentation fails it's often because the person speaking is thinking too much about him or herself, not about the audience.
My main tips about the presentation itself would be: first, don't make your presentation too long. And keep to the agreed time: if it is supposed to be 20 minutes, make sure it doesn't go on for half an hour. Secondly, don't have more than four or five main points. People can't usually remember more than that anyway, so make four or five your maximum.

Thirdly, try to only use your normal vocabulary, words which come naturally to you; don't experiment with new words – you'll probably mispronounce them. And finally, write your notes out in very big writing so you can see each page or paragraph at a glance.

Well, it's impossible to completely overcome nerves when you are speaking in public, but you can learn to cope with their effects.

Remember the audience want you to succeed. They haven't come to see you fail.

As far as telling jokes is concerned. I'd say definitely use funny anecdotes from your personal experience, stories, and things like that. But be careful, for example, about making jokes about other people or other nationalities. That can be offensive.
Moving on to the most important moment in a presentation, I'd say the beginning is the most important. If you start badly the audience may go to sleep, or even leave, so try to start your presentation strongly with your main point, the main message you want to get across, and then give specific examples.

Exercise 4. Nearly all speakers plan their presentation carefully. Here are three ways of preparing a presentation.
1. Practice the presentation beforehand and then deliver it without notes.
2. Give the presentation from notes.
3. Write the presentation in full and read it.
I. What are the pros and cons of each approach?
II. Would you prepare a presentation in one of these ways? If not, describe how you would do it.
Exercise 5. Compare the following presentations, discuss
a) what is wrong with the first one
b) in what ways the second one is better

Presentation 1.

Right. Good. Well, perhaps I'll start, shall I? Can you hear me all right? Good. Now … erm … probably the most important thing I've got to say is that … well, the company's results are looking pretty good this year. Have you all seen the graph of sales figures? No? Well, I've got one here. There you are. Can you see this all right at the back? No? Well, you'll have to take my word for it, then. Results are good. Yes. Very good, actually. But, anyway, I'll tell you a bit more about that in a minute. Now, where was I? Um … let's start with what's happening at the moment. Would that be a good idea?

Presentation 2.

Good morning, ladies and gentlemen. I'm here today to tell you about our company's financial position. I've divided my presentation into four parts. Firstly, I want to talk about the current financial situation. Secondly, I'd like to examine our performance over the past year. Thirdly, I'll look at our prospects for the next twelve months. Finally, I'll make some recommendations. I'll be happy to answer questions at the end of my presentation.
Right. I'd like you to look at this graph …

Exercise 6. Read the second presentation again and answer these questions:
1. What is the purpose of the presentation?
2. When will the presenter answer the questions?
3. Which of the phrases below does the presenter use to …
a) explain the purpose of the presentation (Why)
b) describe the structure of the presentation (What)
c) say when he'll answer questions (How)
My main aim today is to tell you about our company's financial position.
I'll be happy to answer questions at the end of the presentation.
There are four parts of today's presentation.
I'm here today to tell you about our company's financial position.
I've divided my presentation into four parts.
I'll take questions at the end.

Exercise 7. Cross out the verbs which do not fit in the following presentation extracts.
1. Perhaps I should start off by *pointing/stressing/reminding* that this is just a preliminary report. Nothing has been finalized as yet.
2. I'd like to *draw/focus/attract* your attention on the short-term objectives to begin with.
3. Basically, what we're *suggesting/asking/reviewing* is a complete reorganization of staff and plant.
4. I'm sure there's no need to draw *out/spell out/think out* what the main problem is going to be.
5. The basic message I'm by trying to *get through/get across/get to* here is simple. We can't rely on government support for much longer.
6. Disappointing end-of-year figures *underline/undermine/underestimate* the seriousness of the situation.
7. But later on I will, in fact, be *putting over/putting forward/putting out* several detailed proposals.
8. One thing I'll be *dealing with/referring/regarding* is the issue of a minimum wage.
9. And I'll also be *asking/raising/putting* the question of privatization.
10. But we do need to seriously *ask/answer/address* the question of how we are going to overcome it.

Exercise 8. Complete the following sentences with the correct word.
1. First of all, I'd like to … the main points of my talk.

a) preview
b) overview
c) outline

2. So, what we're really … are likely developments in the structure of the company over the next five to ten years.
a) driving at
b) aiming at
c) looking at

3. The eighteen-month plan, which by now you should have all had time to look at, … in detail our main recommendations.
a) outlines
b) reviews
c) sets out

4. And the main conclusion we've … is that massive corporate restructuring will be necessary before any privatization can go through.
a) thought
b) got to
c) come to

5. I'd like to … yours attention to some of the difficulties we're likely to face.
a) turn
b) draw
c) focus

6. I have the figures for the last three months to … to you.
a) have
b) introduce
c) present

7. I've tried to … our difficulties into some kind of perspective.
a) put
b) fill
c) bring

8. I'm going to be … at the arguments against networking.
a) showing
b) telling
c) looking

Exercise 9. Write down a possible phrase or sentence for each of the following. Use the words provided in brackets.

Example: You are a sales manager from the St.Petersburg office. Not everyone knows you. How do you introduce yourself at the beginning of a presentation?
(I'm ...) Hello. I'm Sergey Ivanov from the St. Petersburg office.

1. How can you greet the audience? (coming)
……

2.You want to get everyone's attention so that you can start your meeting. What can you say? (here/begin)

……
3. You have handouts that you want to give people. What can you say? (take)
……
4. In your presentation, you plan to explain the problems of the old process and then present the new process. How can you explain what you are going to do? (First/After that)
……
5. How can you tell your listeners that there will be time for questions at the end? (plan/leave)

Exercise 10. Fill the gaps in the sentences below with a preposition:
on at on by for in into through.
1. Thank you … coming.
2. I'd like to start … outlining the changes.
3. Then I'll go … to highlight what I see as the main points.
4. I'll start off by filling you … on the background to … .
5. I've tried to put our recent difficulties … some kind of perspective.
6. We can discuss any questions … the end.
7. I want to focus … the five year plan.
8. I'll go … the main points on the handout.

Exercise 11. Rearrange these sentences to make a complete presentation. The first one has been done for you.
1. Now about our overseas stores. We have 4 large stores in France and another 10 in other European countries.
2. And finally I'll mention our future plans. I'll be pleased to answer any questions at the end of my talk.
3. I'm going to talk to you today about our company. First, I'll give you some basic information about Tara Fashions.
4. As far as career opportunities are concerned, we have opportunities in all areas of our business.
5. Then I'll talk about our overseas stores.
6. Let me start with some basic facts about Tara. We sell clothes for men and women. We have 15 stores in Spain. All of the stores are very profitable.
7. Good morning, everyone. Thanks for coming to my presentation. My name's Marta Rodriguez. I'm Personnel Director of Tara Fashions.
8. Next I'll talk about career opportunities with Tara.
9. Finally, a few words about our new project. We are planning to open a new store in New York next year.
10. Well, thanks very much for listening to my talk. Are there any questions?

7									

Exercise 12. Use some of the phrases from the exercises to practice starting two presentations, based on the notes below.

Presentation 1.
1. Greet audience
Purpose: talk about new working practices marketing compaign
Four parts:
1. Health and safety procedures
2. Security measures
3. Pay and conditions
4. Management meetings
Questions at the end

Presentation 2.
2. Greet audience
Purpose: talk about a new
Three parts:
1. The product
2. The launch
3. Advertising and promotion
Questions during the presentation

Exercise 13. Complete the following introduction with appropriate words from the box.

present/outline let's glad/happy/pleased have finally like First from know here/ready time take then/next/after that from know here

S: Well, if everyone's 1……..2……. start. It's great to have Liu Wei here 3 … the office in Beijing. As you 4… , he is the Director of Marketing and has achieved excellent results.

L.W.: Good afternoon. Thank you Sam. I'm 5… to be here today. Ok, today. I'd 6… to talk about the developments in the Beijing office. In my presentation this afternoon I'd like to 7… three main points. 8……, I'll briefly outline our small beginnings two years ago; 9…… I'll explain how we adapted the RB 409 range to suit our local market and 10 …… I'll show our success. If you have any questions, there'll be 11 …… at the end.
Before I start, I 12 …… a hand out for you. Would you like to 13 …… one? Here you are.

Exercise 14. Prepare the introduction of the presentation using phrases from the relevant sections in the Phrase bank. Use the checklist for introduction to help (Helpfile 5)

II. Main Body
1. Signposting (transitions)

Exercise 1. Match the words and phrases with the different stages of a presentation.

1. If you look at the pie chart …	a) Greeting the audience
2. Secondly, I'd like to look at…	b) introducing the subject
3. I'd like now sum up the main points …	c) sequencing
	d) Introducing a visual aid

4. I'm going to talk about … e) Concluding
5. Let's now move on to a separate issue which is … f) Digression
6. First of all, let me welcome you To Digital Enterprises …

Exercise 2. Match the different parts of the presentation with the phrases.

1.I'd like to give you an example … a) a general idea
2. To move off the point for a moment … b) a visual aid
3. Let's have a look at this chart which represents … c) a digression
4.What I want to make clear is this … d) an example
5. I'd just like to give you an overview of… e) an important idea
6. What I really want to stress is this … f) a point of clarification

Exercise 3. Here are four phrases that you can use to link the sections of your presentation together, which phrase would you use ...

1….before the summary? a) Right. Let's recap, then
2….before the conclusion? b) Let's move on, shall we?
3….between any two points? c) I'd like you to have a look at this.
4. …to introduce visual aid? d) I'd like to conclude by saying this.

Exercise 4. Match the sentences with the different parts of the presentation:

1. a visual aid
2. a digression
3. an example
4. an important opinion

a. I'd like to give you an example.
b. What I'm getting at is this.
c. Let's have a look at this.
d. To move off the point for a moment …

Exercise 5. Which of the above phrases would you use to introduce each of the following four extracts?

Extract 1.

This is a graph of the company's turn over during the past three months. As you can see, sales rose slightly in April and May before falling sharply in June.

Extract 2.

The company's sales of traditional English sausage have fallen by over 37% in its three largest supermarkets in the north of England during the past six months.

Extract 3.

The company must change its product range and improve its image if it wants to survive – that is why the right advertising targeted at the right customer is so important.

Extract 4.

Frankly, the company's attitude reminds me of something a journalist once said to me, "You can never underestimate the intelligence of the general public". Well, in this case, I think that's what the company has done. But let me get back to my main point.

Exercise 6. Complete the following signpost phrases and sentences.

1. Moving on/question/the US market
2. Expand/the figures/last year
3. Going back/a moment/the situation last year
4. Let's turn now/our targets/the next five year
5. Go back/the main reasons/our collaboration/the Germans
6. I'd like/conclude/I may/repeating what I said/the beginning/this presentation
7. I'd like/turn now/our projections/year 2005
8. Let me expand/some/the main points/our proposal
9. Digress/a moment, let's consider/alternatives
10. I'd like/recap/the main points.

2. Developing an Argument

Exercise 1. Read the text of the presentation below and predict where the speaker uses the linking words and expressions.

by and large	therefore	although	so
whereas	however	in my opinion	

Total Quality Assurance means meeting customer needs without error, on time, every time. Our experience so far has [1] _____ been good. [2] _____, the message has not yet reached everybody in the company. [3] _____the number of projects and people involved has grown, they have not got as fast as we would like. [4] _____ one of the key problems is how to express the benefits of this programme in money terms. [5] ____ this problem is particularly acute when accounting for the less tangible benefits of the programme. At the shop floor level, people will tend to talk the language of things, [6] _____ at the upper management, people talk the language of money. Middle management,
[7] _____ need to be bilingual to translate between the two.

Exercise 2. Which of the linking expressions actually used in the speech could be replaced by those below?

a) consequently

b) to my mind
c) now
d) even so
e) on the whole

Exercise 3. Complete the text below using the correct form of the words in brackets.

The effect of tourism

The explosion in the tourist industry can **1** …… (*explain*) by more affordable transport and greater wealth among some of the world's population . It is true that tourism sometimes **2** …… (*result*) in an improvement in the standard of living of local people, as well as **3** …… (*contribute*) to increased understanding of other cultures. However, many of the **4** ……. (*effect*) of tourism are negative. Atmospheric pollution **5** ……. (*cause*) by air travel, while the building of hotels **6** …… (*lead*) to shortage of resources such as water. So tourism sometimes **7** ……. (*cause*) the destruction of the very places that people want to visit.

Exercise 4. Rearrange these sentences to make a complete summary:

1. As far as cost is concerned, this option is clearly the best. It is much cheaper to implement than the others and the financial risks are negligible.
2. Moving on to human resources, I feel that this is the option that will be most acceptable to our workforce. There are several reasons for this. First and foremost, this option will not involve any redundancies.
3. There are a number of reasons for choosing Option A. First and foremost, it is the most attractive option.
4. In short, it is exactly what this company needs.
5. Finally, there is the question of planning and the future direction of this company.
6. By 'attractive' I mean that it is the option which is the best for out-company in all the areas of greatest concern.
7. In addition, it can be implemented almost immediately, and there will be no need to obtain extra funding from the banks, which would be the case with the other options.
8. I believe that Option A is the one which is most in true with both our short-term and long-term plans. It is modern, progressive and has great potential.
9. In particular I suggest that there are three main areas to consider: cost, human resources and future planning.
10. Secondly, a staff retraining programme will not be necessary and, thirdly, we will be able to implement this option without introducing shift work.

Write your answers here:

3									

Go back and underline all the expressions used to connect ideas, for example: *Moving on . . .*

Exercise 5. The following is an extract from a presentation given by the ***Marketing Director*** *of a company launching a new product. Complete the extract using* ***the following*** *words and expressions:*

furthermore however as far as ... is concerned
last but not least to begin with for example
apart from this on the other hand I'd like to start

1. ..... by outlining some of the advantages of our new product.
2. ..... it is the most advanced product of its type currently on the market.
3. ..... it is equipped with a number of features that are not to be found in similar devices produced by our competitors.
4. ....., it is guaranteed 100% waterproof.
5. Equivalent products produced by our competitors, ... are water-resistant, not water-proof.
6. ..... obvious advantage, it is also shock-resistant and dust-proof.
7. ..... price ....., I am sure that our product is the most competitive on the market.
8. It is not only price that makes this product attractive, ... It is also guaranteed for no less than 20 years.
9. ..... we can offer retailers a substantial discount on bulk orders purchased direct from the factory.

3. Preparing Visual Aids

Exercise 1. Compare these two visual aids. Which do you think would be more effective on a screen during a presentation? Think about these points.

1. Which has more visual impact?
2. Which is easier to read?
3. Do you want people to read or to listen to you?

Audience

1. It is important that you know as much as possible about your audience.
2. You should try to find out who will be in the audience before the presentation starts (Phone the organizer or speak to the boss).
3. You should also try to find out whatever you can about their interest. (You don't want to make jokes about soccer in a room full of Americans!)
4. Make sure that you don't give them too much information or much too long on a subject which they find boring.

AUDIENCE
Who are they?
What are they interested in?
What do they want to know?

Exercise 2. a) Decide how you would present this as a visual aid in a presentation. Write your own version.

When giving presentations it is important to keep things as simple as possible. If you have got lots of detailed information, it is probably best to put it in print and allow people to read it either before or after the presentation. Presentations work best when they talk about ideas rather than facts. They can also be good for motivating and inspiring people. But, of course that very much depends on your personal qualities.

b) Compare your visual aid with those of others in the class.

Exercise 3. Put the following mini-presentations into correct order by putting a number in the space on the left.

a. … The next is shopping.
… The third most popular is playing computer games.
… The pie chart presents the most popular activities for young people.
… As you can see, the most popular is going to nightclubs and bars.
… Therefore you can see that our product is well placed in the market.

b. … In the first quarter, sales of the Aztec range rose sharply.
… In the third quarter, sales leveled out.
… Let's look at the figures more closely.
… But then sales took a dip in the second quarter.

c. … You can see that the departments are listed across the top in the first row.
… If you look closely you'll see that office staff did much better this year.
… It shows the results of the company language test.
… Take a look at this table.
… and the names of those who took the test are listed on the left in the first column.

Exercise 4. Choose the correct verb from the box below and put it into the sentence. Make sure the verb agrees with the subject.

leave	see	draw	show	look	
represent	find	note	indicate	notice	

a. I'll … the slide up while I talk.
b. If you … closely at the diagram, you'll see that there are seven switches.
c. You can … the figures on my next slide.
d. The vertical axis … sales in Euros.
e. I'd like … your attention to the second graph.
f. This diagram … a plan of a new factory.
g. Let me … the relevant slide.
h. It's interesting …. that sales have increased dramatically.
i. Each line … the progress of a different product.

j. As you may … the sales peaked last month.

Exercise 5. Underline the correct words.
1. There was a *slightly/slight rise* in profits last month.
2. We *rose/increased* our profits slightly last month.
3. There was a sharp fall *in/of* our sales last quarter.
4. Our sales fell *by/of* 6% last quarter.
5. Our share price *hit/beat* a low last month.
6. Inflation is increasing *slow/slowly* at the moment, in/by about 1% a year.
7. Operating profits went from 5 m *to/until* 6 m.
8. This year we *raised/rose* dividends to share holders.

Exercise 6. Complete the following sentences using an appropriate form of the given verb.
1. Exports … significantly between 2004-2006 (fall).
2. Since 2007 they … steadily, however (rise).
3. Overheads … sharply since last year (rise).
4. There … a gradual fall in the price of raw material between 2005-2008 (be).
5. Domestic sales … steadily over the past 4 years (increase).
6. The workforce … by 10% last year (grow).
7. Salary costs … sharply over the last few years (go up).
8. The price … considerably in 2002 (rise).
9. The workforce … by 25% since 2000 (go down).
10. There … a slight fall in domestic sales this year (be).

X. TESTS

I. These are some expressions used in the presentation. Put them in a logical order.
a. There will be time at the end for questions.
b. I will then look at some of the challenges
c. I'm here to talk about the "twines" market.
d. I'll finish by looking at some case studies.
e. I will begin by outlining an overall profile.
f. To start off, let me ask you ...
g. Good morning, everyone.
h. I guess the best way to answer that question is ...
i. If you look at this graph, you'll notice ...
k. My name is Janet Wilkins.

II Complete the following expressions using the correct preposition.
a) to b) on c) of d) off e) for f) back g) about h) up

1. To start _____, then, …
_____ what I mean, …

2. To move _____ to my next point, …
3. To go _____ to what I was saying, …
4. To turn now _____ a different matter, …
5. To say a bit more _____ that, …
6. To give you an example
7. To digress _____ a moment, …
8. To sum _____, then, …

III. Which of the expressions above are used to.

a. return to an important point?
b. repeat the main points?
c. talk about something unconnected?
d. begin the presentation?
e. expand a point?
f. change the subject?

IV. Underline the correct words.

1. *First of all/after all*, I'd like to thank you for inviting me here to speak to you this morning.
2. I'll be talking today about robotics, and *anyway/in particular* their commercial exploitation.
3. *Especially/Clearly* there's huge interest in the subject.
4. As far as the general public is *concerned/concerning* the general public, Sony Corporation thinks that the best way place to launch the robot revolution is home entertainment.
5. *Especially/Furthermore* home entertainment is likely to be the biggest market eventually/at last.

6. *As a matter of fact/Moving on to* all the leading players are investing tens of millions of dollars in the development of personal robots.
7. *I mean/As a result* progress has been rapid.
8. *On the other hand/At the end*, it's clear that the development of 'robo sapiens' will take longer, a lot longer.
9. *Nevertheless/In general* it's clear that in terms of competition between countries Japan leads in robotics at the moment.
10. So, *in fact/to sum up*, I've tried to show you how I believe we're entering a new age, the age of the robot, and it's an age that's full of business opportunities.

PART V

GRAMMAR NOTES

Система времен в действительном залоге
Теоретический материал

Active Voice

Tense	Present	Past	Future
Simple	V/Vs	V2/Ved	shall / will } V
Continuous	am / is / are } Ving	was / were } Ving	shall / will } be Ving
Perfect	have / has } V3/Ved	had } V3/Ved	shall / will } have V3/Ved
Perfect Continuous	have / has } been Ving	had been } Ving	shall / will } have been Ving

Как видно из приведенной таблицы в английском языке существует 4 группы времен:
Группа времен, которая выражает действие безотносительно к какому либо моменту, называется Simple или Indefinite.Времена этой группы (настоящее, прошедшее, будущее) выражают обычное действие или ряд последовательных действий и употребляются лишь для констатации факта свершения действия.
I go to school every day.
Я хожу в школу каждый день.
Last year he visited his sister every week.
В прошлом году он навещал свою сестру каждую неделю.
We'll go to the cinema tomorrow.
Мы пойдем завтра в кино.
С этой группой времен в настоящем времени употребляются словосочетания every day, every evening, в прошедшем времени yesterday, last month, last year, в

будущем tomorrow, next year, next month и другие, которые обычно ставятся в конце предложения.
Наречия неопределенного времени usually, sometimes, often, always и др. как правило, стоят перед смысловым глаголом, хотя ‘sometimes’ может стоять и в начале предложения.

Группа времен, которая употребляется для выражения действия в его развитии, происходящего в какой-то данный момент или отрезок времени в настоящем, прошедшем или будущем называется Continuous (или Progressive)Tenses.При этом не имеет значения сколько времени длится данное действие, важно лишь то, что действие рассматривается в развитии как процесс.
I am reading (now).
Я читаю(сейчас).
Следует помнить, что глаголы, выражающие восприятие и умственную деятельность, а также и некоторые другие глаголы во временах группы Continuous не употребляются .
К таким глаголам относятся:
to want-хотеть,
to like-нравиться,
to love-любить,
to wish-желать,
to see-видеть,
to hear-слышать,
to feel-чувствовать,
to notice-замечать,
to know-знать,
to understand-понимать,
to remember-помнить,
to forget-забывать,
to seem-казаться,
to be-быть и др.

Времена группы Perfect указывают на завершенность действия к настоящему моменту (Present Perfect), к прошедшему моменту (Past Perfect) , или к будущему (Future Perfect), результат которого связан с последующим действием.
Характерными для этой группы времен являются наречия неопределенного времени: ever-когда-либо, never-никогда, already-уже, yet-еще, just-только что, lately-недавно (за последние дни или недели), за последнее время, recently-недавно (за последние месяцы или годы), up to now-до сих пор, once однажды, когда-то, many times-много раз и др.
Заметим, если в вопросительном предложении already стоит в конце предложения, то оно выражает удивление.
Have you translated the article already?
Неужели вы уже перевели статью?

Обратите внимание, что в подавляющем большинстве случаев глагол, стоящий в английском языке в Present Perfect переводится на русский язык прошедшим временем.
Если в предложении имеются обстоятельства времени, обозначающие незаконченный отрезок времени, в котором протекает действие, обстоятельства с предлогом for в течение (for a long time давно, долго, for years - в течение многих лет, for ages – целую вечность и другие), с предлогом since с (since morning - с утра, since 9 o'clock - с 9 часов), придаточные предложения времени с союзом since с тех пор как, то тогда сказуемое, стоящее в Present Perfect, переводится и настоящим временем.
I have lived in this city for 5 years.
Я живу (прожила) в этом городе 5 лет (живу и сейчас).
Past Perfect употребляется для выражения действия, совершенного к какому-то моменту в прошлом. Момент может быть выражен как обстоятельством времени с предлогом by, так и другими действиями (глаголом в Past Simple).
When I arrived to the party, Tom had already gone home.
(К тому моменту) когда я приехал на вечеринку, Том уже уехал домой.
Future Perfect употребляется для выражения действия, которое полностью будет закончено к какому-то моменту в будущем.
We'll have finished the work by 2010.
Мы закончим работу к две тысячи десятому году.
Perfect Continuous Tenses (совершенные продолженные времена) употребляются для выражения действия, начавшегося в определенный момент раньше другого момента в настоящем, прошедшем, или будущем и длившегося до этого момента, иногда и включая этот момент.
I have been studying English for five years.
Я изучаю английский язык в течение 5 лет (продолжаю и сейчас).
How long had you been waiting when the bus finally came?
Сколько времени ты прождал автобус, пока он, наконец, пришел?
We'll have been studying English for 5 years by next year.
К следующему году мы будем изучать английский 5 лет.
Глаголы, не имеющие форм Continuous вместо Perfect Continuous стоят в Perfect Tense.
They have known each other for a long time.
Они давно знают друг друга.

СИСТЕМА ВРЕМЁН В СТРАДАТЕЛЬНОМ ЗАЛОГЕ

Теоретический материал

Страдательный залог (Passive Voice) показывает, что действие глагола-сказуемого направлено на лицо или предмет, выраженный подлежащим.

He asked a lot of questions. (Active Voice)
Он задал много вопросов.

He was asked a lot of questions. (Passive Voice)
Ему задали много вопросов.

Страдательный залог образуется при помощи вспомогательного глагола ***to be*** в соответствующем времени, лице и числе и причастия прошедшего времени смыслового глагола: ***to be+ Participle II (Ved/V3)***

Passive Voice

	Present	Past	Future
Simple Tense	am + Ved/V3 is + Ved/V3 are + Ved/V3	was + Ved/V3 were + Ved/V3	shall + be Ved/V3 will + be Ved/V3
Continuous Tense	am + being Ved/V3 is + being Ved/V3 are + being Ved/V3	was + being Ved/V3 were + being Ved/V3	
Perfect Tense	have + been Ved/V3 has + been Ved/V3	had + been Ved/V3	shall + have been Ved/V3 will + have been Ved/V3

V- основа глагола
Ved/V3 - Participle II стандартных и нестандартных глаголов
В английском языке страдательный залог употребляется значительно шире, чем в русском. Это объясняется тем, что в английском языке в страдательном залоге могут употребляться глаголы, принимающие любое дополнение (прямое, косвенное, предложное), тогда как в русском языке в страдательном залоге употребляются только глаголы, принимающие прямое дополнение.
Страдательный залог употребляется, когда лицо, совершающее действие, не упоминается в предложении; оно либо неизвестно, либо говорящий не считает нужным сообщить о нём.
He was told to wait.
Ему сказали подождать.
В тех случаях, когда необходимо указать лицо или предмет, совершающий действие, употребляются предлоги by, with.
The contract was signed **by** the president of the company.
1. Контракт был подписан президентом компании.
2. Президент компании подписал контракт.

Существует несколько способов перевода английских конструкций страдательного залога на русский язык:

1. Сочетанием глагола ***быть*** с кратким страдательным причастием.

The problem was solved successfully.
Проблема была решена успешно.

2. Возвратным глаголом (на -ся) в соответствующем времени, лице, числе.

The experiments were being made last year for a week.
Опыты проводились в прошлом году в течение недели.

3. Глаголом в действительном залоге в 3-м лице множественного числа с неопределённо-личным значением.

The question has been discussed.
Вопрос обсудили.
Страдательный оборот с формальным подлежащим, выраженным местоимением **it,** переводится неопределённо-личным предложением.
Сказуемое, как правило, выражается глаголами: to say, to believe, to expect, to think, to know и т. д.
It is expected that... It is known that...
Ожидают, что... Известно, что...
При следующих глаголах, употреблённых в форме страдательного залога, подлежащее английского предложения следует переводить существительным в косвенном падеже: to ask, to give, to offer, to refuse, to deny, to show, to help, to inform, to advise, to discuss, to promise, to tell, to send и т. д.
I wasn't told about it.
Мне об этом не сказали.
The reporter was given 20 minutes.
Докладчику дали 20 минут.
Предлог, стоящий после глагола и относящийся к следующим за ним словам, при переводе на русский язык ставится перед тем словом, которое в английском предложении является подлежащим. Это такие глаголы, как: to agree upon (on), to speak about, to refer to, to deal with, to rely on (upon), to think about (of), to pay attention to, to insist on и т.д.

The results can be relied upon.
На эти результаты можно положиться.

При переводе следующих глаголов в страдательном залоге, которые не имеют предлога в английском языке, перед подлежащим русского предложения становится предлог, который подразумевается в русском языке: to address, to answer, to affect, to influence, to follow, to join, to attend, to watch, to approach и т.д.

The question was answered immediately.
На вопрос ответили сразу же.

Practical Tasks

(Active Voice)

Exercise 1. Translate the sentences into Russian paying attention to Tenses.

1. The American writer Isaak Asimov tells about wonderful computing machines and schools of distant future.
2. In 1822 Charles Babbage created the first mechanical calculator.
3. After school Gates went on studying at Harvard University.
4. The National Physical Laboratory is now conducting experiments aimed to recognize human speech.
5. Instructions will tell the hardware what to do and will tell the user what it has done.
6. By 1880 manufacturing technology had improved to the point that new machines could be produced.
7. In some years IBM publication department will be fulfilling 100% translation demands via machines.
8. For many years, universities and colleges have been looking for ways of offering courses to students living far from classes.
9. By the beginning of the network age Microsoft Corporation had been selling software for individual PCs.

Exercise 2. Choose the correct form of the Predicate.

Summarize your knowledge of Present Simple or Present Continuous. Put the verbs in brackets into the correct tense.

1. A lens (to be) a piece of glass, plastic or other transparent material curved on one or both sides.
2. Lenses (to refract) the light rays from an object forming an image.
3. I (to use, never) my mobile phone if I (to drive).
4. The walls of the house (to absorb) heat day after day.
5. The news bulletin (to begin) at 6 p.m.
6. In spring the days (to grow) longer and the nights (to become) warmer.
7. Jack often (to go) to the theatre. On Saturday he (to go) to see a new play.
8. Electromagnetic waves (to travel) in all directions through the Universe.
9. Some people still think the sun (to go) round the earth.

Exercise 3. Summarize your knowledge of Past Simple or Past Continuous. Choose the correct tense.

1. Keppler *was inventing/invented* the form of the refracting telescope.
2. British-Hungarian scientist Dennis Gabor *was developing/developed* the theory of holography while he *was working/worked* to improve the resolution of an electron microscope.
3. Alexander Graham Bell *was patenting/patented* an optical telephone system, which he called the Photophone, in 1880.
4. When *did/was* it *become/becoming* possible to produce holograms of high-speed events?
5. Dr. Stephen A. Benton *was inventing/invented* white-light transmission holography while he *was researching/researched* holographic television at Polaroid Research laboratories.

6. Sir Isaac Newton, the great scientist and thinker *was discovering/discovered* some of the fundamental laws of mechanics.
7. The union of electromagnetic theory with optics *was beginning/began* when Maxwell *was finding/found* that his equations for the electromagnetic field (1873) described waves travelling at the velocity of light.
8. From 1609 till 1610 Galileo Galilei *was learning/learned* of the invention of the telescope by Hans Lippershey.
9. Bernhard Schmidt *was inventing/invented* a third type of telescope.

Passive Voice

Exercise 1. Give English equivalents of the following Russian phrases, using impersonal passive structures and adverbs *widely, generally* where required.
1. Говорят, что... 2. Предполагается, что... 3. Можно надеяться, что... 4. Следует признать, что... 5. Было найдено, что... 6. Общепризнано, что... 7. Считают, что... 8. Широко распространено мнение, что...

Exercise 2. Identify passive structures followed by a preposition and give Russian equivalents of the relevant part of the sentence as shown in the following example.
Example: *Such things are not even thought of before the discovery is actually made. "Things are not thought of..." О (таких) вещах не думают...*
1. This method has been referred to in an earlier paper. 2. I do not think this instrument can be relied upon. 3. The data cannot be accounted for by the existing theory. 4. This theory has been referred to as the "big bang" theory. 5. The best treatment of this syndrome is generally agreed upon. 6. Rapid development of chemical technology has been called for by the needs of the national economy. 7. The prolongation of life may be thought of as a feat of endurance rather than a race against time. 8. The necessity of fundamental research is insisted upon. 9. The ideas advanced at the brain-storming session were much laughed at. 10. The lab-assistant is out but the reaction process is being looked after. 11. The theory of Vernadsky "noosphere" may be depended upon. 12. Enthusiasm of practitioners cannot be substituted for material investments that are of vital necessity.

Exercise 3. A. Identify the passive structures and the logical predicate, compare the sentences and give Russian equivalents of the relevant part of the sentence.
1. a) This atmospheric interference has often been made reference to;
b) Reference has been made to this atmospheric interference. 2. a) Notice has been taken of the obvious advantages of this technique; b) The obvious advantages of this technique have been taken notice of. 3. a) Recently the problem has been given close consideration; b) Recently close consideration has been given to this problem. 4. a) Mention has already been made of the fact that gold is slowly attacked by these substances; b) The fact that gold is slowly attacked by these substances has already been made mention of. 5. a) In the course of further scientific development extensive use will be made of modern computing machines; b) In the course of further

scientific development modern computing machines will be made extensive use of. 6. a) Care must be taken of the reaction conditions; b) The reaction conditions must be taken care of.

B. Identify the passive structures and the logical predicate and give Russian equivalents of the relevant part of the sentence. (Mind the negative form.)

1. No care and attention is given to protecting forests from fire. 2. No attempts have been made to explain the lattice distortions. 3. No account was taken of the failure to form complexes with bromide. 4. No mention had been made of the particular circumstances in which measures to speed up scientific and technological progress should be carried out. 5. At that time no contribution was made to the problem of the origin of life.

Exercise 4. A. Give English equivalents of the italicized part of the sentences, using passive structures and the verbs: *to affect, to allow, to attend, to develop, to deal with, to face, to follow, to make use of, to refer to.*

1. За докладом последовала *бурная* дискуссия, *2.* На скорость *реакции* влияет множество *других факторов. 3. Этот* вопрос будет *подробно* рассмотрен *в главе III. 4. На этой стадии* мы столкнулись с *новыми* трудностями. *5.* Ему не дали возможности закончить *эту работу. 6. В последнее время* эта теория часто упоминается *во многих статьях*.

7. Семинар, на котором присутствовало всего 5 человек, *прошел вяло и неинтересно.*

8. Для того чтобы преодолеть эти недостатки, использовали новую методику, специально разработанную *для данного эксперимента.*

B. Translate into English.

1. Проблема была впервые поставлена (осознана) в XVIII веке. 2. Предполагается, что полученные расчетные данные были проверены экспериментально. 3. Теория была принята большинством ученых после того, как были получены новые доказательства в ее поддержку. 4. (В статье) представлены новые данные относительно механизма этого процесса. 5. Это расхождение можно объяснить разными методиками измерения.

6. (В работе) использован новый метод расчета этого параметра и предложена новая модель процесса. 7. Особое внимание уделено сравнению экспериментально полученных результатов с результатами, предсказанными теоретически. 8. В лаборатории установлено новое оборудование.

Exercise 5. Translate sentences into Russian paying attention to passive structures.

1. The theory leading to these conclusions is outlined as follows. 2. Several experiments and considerations were made to illustrate and clarify these points. 3. The only experimental evidence is presented in the previous section and is based on the transient measurements.

4. Expert systems are widely used in medicine, chemistry and other fields of science and technology. 5. The typical spontaneous depolarization of the particles was suggested by Bozler in 1948. 6. The attraction between the molecules is being

neglected. 7. Some pressing problems will be discussed at the symposium. 8. We were informed that a new idea had been advanced. 9. The new discovery is being much spoken about. 10. Some of the data obtained can not be relied upon, others have not been published yet. 11. Many materials now in common use were not even thought of thirty years ago. 12. The quality of the instruments used can be safely relied upon. 13. The changes taking place are not easily accounted for. 14. The problem of therminology has not been touched upon here. 15. These features are strongly affected by the corrosion resistance of the film. 16. The particle paths are thus unaffected although their velocities are changed. 17. Many compounds can be decomposed, when they are heated or when they are acted upon by other forms of energy, into simpler compounds or into their constituent elements.

Обстоятельственные предложения условия
Adverbial Clauses of Condition

Обстоятельственные предложения условия соединяются с главным предложением союзами: **if** – если, **unless** – если не, **provided (that), on condition (that)** – при условии, что (если), **suppose (that)** – предположим (что).
Обстоятельственные предложения условия делятся на:

1. Реальные, осуществимые – **I тип**, соответствующие в русском языке предложениям с

глаголом в изъявительном наклонении, выражающие предположение, относящееся преимущественно к будущему времени.
Глагол в придаточном предложении I типа стоит в **Present Simple**, а в главном в **Future Simple**:
If I see him tomorrow, we shall discuss this problem.
Если я увижу его завтра, мы обсудим эту проблему.
Глагол главного предложения может стоять также и в повелительном наклонении.
If you see him tomorrow, tell him to call me immediately.
Если вы увидите его завтра, пусть позвонит мне немедленно.
В условных предложениях первого типа может также заключаться предположение, относящееся к настоящему или прошедшему времени. В таких условных предложениях употребляются любые времена изъявительного наклонения, требующиеся по смыслу. Например:
If I had enough money, I bought all books I needed.
Если у меня были деньги, я покупал все необходимые книги.

2. Условные предложения II типа выражают маловероятные предположения, относящиеся к настоящему или будущему времени, и соответствуют в русском языке условным предложениям с глаголом в сослагательном наклонении.

II тип	Придаточное предложение	Главное предложение
	If… were (Past Simple) Сомнение предположение в настоящем или будущем времени	…should …would …could …might + Simple Infinitive (без частицы “to”)

Для подчеркивания самой вероятности или предположения в придаточном предложении, которое относится к будущему времени, наряду с ***Past Simple*** может употребляться:
- ***should*** (со всеми лицами) в сочетании с инфинитивом без частицы “to”;
- ***were*** (со всеми лицами) в сочетании с инфинитивом с частицей “to”.
Например:

If I should see you tomorrow, I should speak with you about him.
If I were to see you tomorrow, I should speak with you about him.

Если бы я увидел вас завтра, я бы поговорил с вами о нём.

3.Условные предложения III типа выражают предположение, относящееся к прошедшему времени и поэтому являющееся невыполнимым.
Как и условные предложения II типа в русском языке III тип условных предложений соответствует глаголу в сослагательном наклонении и переводится глаголом в форме прошедшего времени с частицей “бы”.
If I had seen you yesterday, I should have asked to help me.
Если бы я встретил вас вчера, я попросил ***бы*** помочь мне.

III тип	Придаточное предложение	Главное предложение
	If… had been (Past Perfect) Невыполнимое условие в прошлом	…should …would …could …might + Perfect Infinitive (без частицы “to”)

Следует отметить, что в предложениях нереального условия (II типа) глагол ***to be*** употребляется в форме ***were*** для всех лиц.
If I were you, I should not do it.
На вашем месте я бы этого не делал.
В условных предложениях союз может быть опущен. В этом случае сказуемое или часть сказуемого придаточного условного предложения выносится на первое место, то есть ставится перед подлежащим. Это так называемая инверсия, то есть обратный порядок слов в предложении. При переводе таких предложений следует вводить опущенный союз “если”.

Were the temperature higher, the results of the test would be better.
Если бы температура была выше, результаты испытания были бы лучше.

Had he had enough time, he would have tested the equipment.

Если бы у него было достаточно времени, он проверил бы оборудование.

В английском языке встречается тип уловных предложений, который называется «смешанным». В таком случае условие относится к прошедшему времени, а следствие к настоящему или будущему или наоборот. Таким образом в предложении совмещаются части условных предложений II и III типов.

If you had done more work yesterday, you would have to do less work today.
Если бы вчера вы выполнили больше работы, вам пришлось бы меньше делать сегодня.
If I were you, I would have gone to that party yesterday.
На вашем месте я бы пошёл вчера на приём.
В простом предложении или в главном предложении обычно встречается форма ***would+инфинитив*** без частицы "to".
Without computers our life would be impossible nowadays.
Без компьютеров наша жизнь была бы невозможна теперь
But for you help I would fail.
Если бы не твоя помощь, у меня бы ничего не вышло.

Practical Tasks

Exercise 1. Put the verbs in brackets into the correct form.

Пример: If it (be) convenient, let's meet at nine o'clock.
If it is convenient, let's meet at nine o'clock.

1. It will be impossible for me to finish my work if you (not cease) this chatter.
2. If she (not, answer) the telephone, she would never have heard the good news.
3. Tell him he must visit the Tower if he ever (go) to London.
4. My friend would be able to help us if he (be) here.
5. If you (want) me to help you, why didn't you say so?
6. We are going to play tennis this afternoon if it (stop) raining.
7. If you (be) in, I should have given the book to you.

Exercise 2. Define the type of the Conditional Clause and give the Russian translation.

Пример: If I were you, I should go there. (II тип)
На твоем месте я пошел бы туда.
If he had seen you, he would have helped you. (III тип)
Если бы он тебя увидел, он бы помог.

1. You would have an accident unless you were careful.
2. I should leave the question if I were you.
3. No mistakes would have been done unless she had been so careless.
4. If you want to have tea ready in time, put the kettle on.
5. If it rains, you will get wet.

Exercise 3. Translate the following sentences.

1. If the model fits well, the observed data will be correct. 2. One will easily calculate the volume, if he knows the dimensions of the body. 3. If life existed on Venus, we should know this. 4. Unless computer techniques had been developed, space research would have never made such great progress. 5. A valuable contribution would be made, if considerable efforts were devoted to the theoretic examination. 6. The same action takes place even in a nonuniform field if it is strong and the electron has a relatively low velocity. 7. Unless the widening were small, the spectrum would not be very faint compared with others. 8. Were one electron removed, a net positive charge would be left. 9. But for radioastronomy, we should have never made the remarkable discoveries in the Universe. 10. It would be worth while investigating the substance mentioned, provided we could get it in sufficient quantity. 11. Should your work meet these conditions, it will be of great service to our industry. 12. Unless the cathode C is water cooled, it will overheat and emit gases. 13. Provided one knows the rate of the emission, one can determine the range of the particles. 14. If the results of their molecular weight determination had been accredited, the concept of giant molecular structures might have been established long before the 1930. 15. The increase in mass is so small that the whole phenomenon might be regarded as trivial were it not for the attention that had been directed to the very large amounts of energy that could be made available if mass were converted into energy on any appreciable scale. 16. As a consequence, it sounds as if «artificial intelligence» were a technique for producing an abundance of clever insights. 17. But for the luminosity of this substance it would be difficult to detect its properties. 18. There would by no increase in current, were it not for a small effect of voltage upon the evaporation rate. 19. The whole phenomenon might be regarded as trivial were it not for the large amount of energy that could be made available if mass were converted into energy on any appreciable scale.

Употребление и перевод глагола should

1. *Should* употребляется для образования глагольного времени Future in the Past (с 1-м лицом):

We decided that we *should meet* in February. Мы решили, что *встретимся* в феврале.

2. В условных предложениях (с 1-м лицом):

If it were my book, I *should give* it to you. Если бы это была моя книга, я бы *дала* ее вам.

I *should have* done this work, in case I had been informed before. Я бы *выполнила* эту работу, если бы я узнала об этом заранее.

3. В придаточных предложениях после безличных предложений типа *it is necessary.*

It is important that you *should do* the work yourself. Важно, чтобы вы *сделали* эту работу сами.

4. В придаточных предложениях цели после союзов *that — чтобы* и *lest — чтобы... не, otherwise — иначе бы...:*

He helped me greatly otherwise I *should not be* able to carry out my work.
Он очень помог мне, иначе я бы не *смог выполнить* эту работу.
5. В бессоюзных условных предложениях:
Should the letter *be brought* in the morning, put it on my desk please. *Если* письмо *принесут* утром, пожалуйста, положите его мне на стол.
6. *Should* в качестве модального глагола со значением долженствования.
One should be careful when crossing the street. *Надо быть очень внимательным* при переходе улицы.

Exercise 1. Translate the following sentences.
1. The substance under investigation should be examined both by chemical and physical means.
2. Why should metals, even in the solid state, be excellent conductors of electricity, whereas salts ordinarily need to be melted before they will conduct?
3. One should keep in mind that the accuracy of Ohm's law fails for certain solutions when alternating currents of very high frequency are employed.
4. Should the uniform charge in volume continue during the cooling of a gas to very low temperatures, the gas sample would have no volume at —273°.
5. «If the beam of ray in the cathode ray tube is influenced by a magnet, why should it not be influenced also by an electrostatic field?» — thought Thomson.
6. In order that this relation should be valid two conditions must be observed.
7. It was already indicated that we should stop further discussion of the physical character of atoms and turn for the moment to another angle of the question of atomic structure.
8. In order that the number of ions in the stream should not fall off as the pressure is reduced, the ions were generated by the action of ultraviolet light on a metal plate.
9. It is of interest to inquire whether a radioactive charge should be classed as chemical in character or not.
10. Should the anode grow too hot you must decrease the power of the transmitter.
11. The same mechanism should be invoked to interpret the data of Fig. 1 as well.
12. To obtain high current densities in a spot, the spot should be at high potential.

Употребление и перевод глагола would

1. *Would* употребляется для образования глагольного времени Future in the Past (с 2-м и 3-м лицами):
He said he *would help* us. Он сказал, что *поможет* нам.
2. В условных предложениях (с 2-м и 3-м лицами):
He *would have helped* me last week, if he had been in the town. Он *бы помог* мне на прошлой неделе, если бы он был в городе.
3. *Would* со всеми лицами употребляется для выражения повторного действия в прошлом. При переводе при этом добавляются слова *обычно, часто, бывало:*
She *would sit* at the window for hours. Она *бывало* часами *сидела* у окна.
4. *Would* со всеми лицами выражает желание (или нежелание) совершить действие:

The doctor insisted that he give up smoking but he *would not.* Врач настаивал на том, чтобы он бросил курить, но он *не хотел.*
5. Would употребляется при вежливом обращении:
Would you kindly help me. *Будьте любезны,* помогите, пожалуйста.

Exercise 1. Translate the following sentences.
1. The question is whether a similarly high ion density would have existed on the axis when the pencil beam is switched off.
2. The value of the surface energy would therefore be expected to depend on crack velocity.
3. If the entire Earth were covered by ocean, high and low tides would follow one another at regular intervals in response to the rotation of the Earth and the revolution of the Moon.
4. The kinetic theory and the corresponding molecular theory of liquids and gases have been of great service in helping to form mental pictures of many processes which would be otherwise too difficult to understand.
5. The average depth of the ocean is approximately 13000 feet. This figure seems large, but if we were to build a scale model with the Earth as a ball 100 feet in diameter, this ocean would be less than half an inch deep.
6. For example, if the magnitude and phase of the negative resistance generator input impedance were largely dependent on transistor trans-conductance, the conversion of low-frequency noise variation in trans- conductance to signal amplitude and phase modulation in the Q — multiplied resonator would result in unacceptable performance.

Неличные формы глагола

Сравнительные таблицы неличных форм глаголов в русском и английском языках

Таблица N1
Неличные формы глаголов в русском языке

Название	Разновидность	Пример	Функция в предложении
причастие	действительное	играющий игравший	определение
	страдательное	играемый сыгранный	определение
деепричастие	несовершенного вида	играя	обстоятельство
	совершенного вида	сыграв	обстоятельство

инфинитив (неопределенная форма глагола)		играть	1. подлежащее 2. обстоятельство с предлогами 3. часть составного сказуемого 4. дополнение

Таблица N2

Неличные формы глаголов в английском языке

Название	Разновидность	Пример	Функция в предложении
Participles (причастия)	Present (I)	playing	1. определение 2. обстоятельство 3. часть глагольной формы
	Past (II)	played	1. определение 2. обстоятельство 3. часть глагольной формы
Gerund (герундий)	-	playing	1. подлежащее 2. дополнение 3. обстоятельство (с предлогом) 4. определение (с предлогом) 5. именная часть сказуемого
Infinitive (инфинитив)	-	to play	1. подлежащее 2. часть сказуемого 3. обстоятельство 4. определение 5. дополнение

Из сравнения таблиц неличных форм глаголов в английском и русском языках следует, что системы неличных форм глаголов различны.

Сравните:

1. Причастие в английском языке выполняет не одну, а две функции, в то время как деепричастие, в отличие от русского языка, отсутствует вообще.
2. В английском языке существует неизвестная русскому языку часть речи - герундий, которая может выполнять в предложении все функции существительного, а именно: быть подлежащим, дополнением, определением, обстоятельством, именной частью сказуемого.

3. У инфинитива в английском языке по сравнению с русским языком есть еще одна функция - функция определения.

§ 2. Причастие

Таблица N3

Формы причастий

	Active	Passive
Present Participle (Participle I)	developing	being developed
Past Participle (Participle II)	-	developed
Perfect	having developed	having been developed

2.1 Причастие настоящего времени. Present Participle (Participle I)

Причастие настоящего времени образуется при помощи окончания **-ing,** присоединяемого к неопределенной форме глагола (asking, writing, working) и выполняет в предложении ряд функций, являясь:

1. частью временных форм (групп Continuous):

He was *playing* in the garden.

Он играл в саду.

He has been *staying* at the hotel since Monday.

Он живет в гостинице с понедельника.

2. определением (аналогично действительному причастию в русском языке):

Look at the *reading* boy.

Посмотрите на читающего мальчика.

3. обстоятельством (аналогично деепричастию несовершенного вида в русском языке):

Reading this book he didn't consult the dictionary.

Читая эту книгу, он не пользовался словарем.

Причастие настоящего времени в функции обстоятельства обычно стоит в начале или конце предложения, и иногда перед ним могут быть поставлены союзы **when** или **while,** не влияющие на перевод предложения, а как бы являющиеся маркерами того, что перед нами обстоятельство времени.

While reading
When reading
} this text without a dictionary the students didn't feel any difficulties.

Читая этот текст
При чтении этого текста
} без словаря, студенты не встретили никаких трудностей.

2.2 Причастие прошедшего времени. Past Participle (Participle II)

Причастие прошедшего времени для стандартных глаголов образуется с помощью окончания **-ed**. Для нестандартных глаголов причастие прошедшего времени - это 3-я форма глаголов (written, begun, given).
Причастие прошедшего времени выполняет в предложении следующие функции, являясь:
1. частью глагольных форм группы Perfect и пассивного залога:
Nowdays Wales has *become* a popular holiday resort.
В наши дни Уэльс стал известным местом отдыха.
2. определением (аналогично русскому страдательному причастию):

the developed country — the obtained results
развитая страна — полученные результаты

Если в русском языке причастие стоит слева от определяемого слова, то в английском языке оно может стоять как слева, так и справа от определяемого слова. Перевод осуществляется согласно правилам русской грамматики, а именно: в русском предложении определение ставится перед определяемым словом.

The results *obtained were* of great importance.
Полученные результаты имели большое значение.

Особое внимание следует обратить на перевод предложений с двумя **-ed**-формами встречающимися подряд. Первая из них является причастием в функции определения, а вторая - это глагол, являющийся сказуемым в предложении.

The results *obtained varied* with the material used.
Полученные результаты менялись в зависимости от использованного материала.
Изредка мы встречаемся с предложениями, где двусмысленность остается даже после анализа лексического значения.

The problem *concerned complicated* processes.
1. Затронутая проблема осложнила процессы.
2. Проблема касалась сложных процессов.

Однако такого рода совпадения крайне редки и обращение к более широкому контексту разрешает эту трудность.

Определенные сложности представляет перевод причастий образованных от глаголов с предлогами **to insist on, to look at, to deal with, to act on, to speak about** и т. д. Перевод их на русский язык производится при помощи определительных придаточных предложений, начинающихся с предлога.

The problems so much *spoken about*...

Проблемы, о которых столько говорили...

Таким же образом следует переводить предложения, включающие в себя причастия, образованные от глаголов **to follow, to affect, to influence, to join** и т. д.

The discovery *followed* by a great experimental activity is of great importance.
Открытие, за которым последовала большая экспериментальная работа, имеет огромное значение.
3. обстоятельством (в русском языке соответствует придаточному предложению):
Given all necessary data, we can solve this problem.
Если нам даны все необходимые данные, мы можем решить эту проблему.
Перед причастием в функции обстоятельства могут стоять следующие союзы: **when, if, whenever, unless, though, once** и т.д.
Сложные формы причастия настоящего и прошедшего времени в пассивном залоге отличаются при переводе тем, что перевод причастия I больше тяготеет к настоящему времени, а причастия II - к прошедшему.

The school *being built* not far from our Institute...
Школа, строящаяся недалеко от нашего института...

The school *built* not far from our Institute...
Школа, построенная недалеко от нашего института...

Перфектные причастия как активного, так и пассивного залога, выполняют в предложении функцию обстоятельства и переводятся:

1. в активном залоге - деепричастием совершенного вида;
2. в пассивном залоге - придаточным предложением со сказуемым в прошедшем времени.

Active voice

Having tested the motor, the engineer installed it into the machine.

Испытав двигатель, инженер установил его в машину.

Passive voice

Having been tested the motor was installed into the machine.

После того, как мотор был испытан, его установили в машину.

Независимый причастный оборот
The Nominative Absolute Participial Construction

Независимый причастный оборот имеет следующие два признака:
1. В этом обороте есть свое собственное подлежащее, выраженное именем существительным или местоимением. Это подлежащее всегда стоит перед причастием и не зависит от подлежащего основного предложения.
2. Независимый причастный оборот отделен запятой от основного предложения.
Для английского языка типично два вида предложений, в которых встречается независимый причастный оборот.

I. Независимый причастный оборот стоит до запятой

Такое предложение следует переводить на русский язык сложноподчиненным предложением. В русском языке такого оборота нет, поэтому рекомендуется переводить его придаточным обстоятельственным предложением времени, условия или причины и вводить союзами **когда, так как, если.** Причастие же переводится сказуемым. Время сказуемого может быть настоящим, прошедшим или будущим в зависимости от формы причастия и времени, в котором стоит сказуемое основного предложения.

These devices being reliable, we use them in our experiment.
Так как эти приборы надежны, то мы используем их в нашем опыте.

The lamp having been lit, Mrs. Macallan produced her son's letter.
Когда (после того как) лампу зажгли, миссис Макаллан достала письмо от сына.

Weather permitting, we shall start tomorrow.
Если погода позволит, мы отправимся завтра.

II. Независимый причастный оборот стоит после запятой

В этом случае на русский язык такое предложение следует переводить сложносочиненным предложением. После запятой ставится один из следующих союзов: **а, и, причем, при этом.** (Но в ряде случаев при переводе предложения на русский язык союз может быть опущен.)

Radio was invented in Russia, *its inventor being* the Russian scientist A. S. Popov.
Радио было изобретено в России, и его изобретателем был русский ученый А. С. Попов.

He turned and went, *we following him.*
Он повернулся и вышел, мы последовали за ним.

Независимый причастный оборот может вводиться предлогом **with.** Такие конструкции рекомендуется переводить деепричастными оборотами или по общему правилу перевода независимого причастного оборота.

The scientist have made a lot of experiments with valuable data being obtained.
Ученые провели множество экспериментов, при этом были получены ценные данные.

Хотелось бы отметить, что в художественной и технической литературе конструкции с независимым причастным оборотом встречаются часто, а в разговорном языке их используют редко.

§ 3. Герундий. The Gerund

Герундий - неличная форма глагола, одна из двух **-ing-** форм (другая - Participle I). Аналогии этой форме в русском языке нет. Герундий обладает как свойствами глагола, так и существительного.

3. 1. Глагольные и именные признаки герундия

Как глагол герундий:
1. имеет формы времени и залога:

Gerund	Active	Passive
Indefinite	telling	being told
Perfect	having told	having been told

2. может иметь прямое дополнение:
She is *fond of driving* a car.
Она любит водить машину.
3. может определяться наречием:
Always *telling* a lie was a bad habit of his.
Всегда говорить неправду было его плохой привычкой.
Как существительное герундий обладает некоторыми именными свойствами:
1. в предложении может выполнять функции подлежащего, именной части сказуемого, дополнения, обстоятельства и определения:
Smoking is forbidden here.
Курение здесь запрещено.
His hobby is *gardening.*
Его любимое занятие - садоводство.
I like *riding on* trains, especially at night.
Мне нравится ездить поездом, особенно ночью.
He was in danger of *coming* late.
Он боялся опоздать.
2. может определяться притяжательным местоимением или существительным в притяжательном падеже:
I hate *his interfering* with my business.
Я терпеть не могу его вмешательства в мои дела.
3. ему может предшествовать предлог:
She was good *at sewing.*

Ей удавалось шитье.
Вышеприведенные именные свойства герундия отличают его от причастия:

	подлежащее	именная часть сказуемого	дополнение	обстоятельство	определение
Gerund	+	+	+	+ on, upon	+ of, for
Participle	–	–	–	+ when, while	+

3. 2. Функции герундия в предложении и перевод герундия на русский язык

1 подлежащее:

Living in a big city has both advantages and disadvantages.
Жизнь в большом городе имеет свои преимущества и недостатки.

*Smokin*g is not allowed here.
Здесь курить не разрешается.

2. именная часть составного сказуемого:

His only intention is *succeeding* in business.
Его единственное стремление - добиться успеха в бизнесе.

3. дополнение:

1) прямое дополнение после переходных глаголов

to admit	допускать
to avoid	избегать
to deny	отрицать
to enjoy	наслаждаться, любить
to forgive	прощать
to hate	ненавидеть
to like	нравиться
to love	любить
to mention	упоминать
to mind	возражать (в отрицательных и вопросительных предложениях)
to remember	помнить
to regret	сожалеть
to suggest	предлагать

He doesn't mind *reducing* the price.
Он не против того, чтобы снизить цену.

I remember *having answered* your letter.
Я помню, что ответил на твое письмо.

At weekends he enjoyed *walking* hours and hours through the forest.
По выходным он любил часами бродить в лесу.

He loved *playing* cards and didn't like *stopping* for lunch.
Он любил играть в карты, но ему не нравилось прерываться на ланч.

2) предложное косвенное дополнение

а) после глаголов предложного управления:

to accuse of	обвинять
to agree to	соглашаться с
to approve of	одобрять
to disapprove of	не одобрять
to apologize for	извиняться
to depend on	зависеть от
to dream of	мечтать о
to insist on	настаивать на
to prevent from	предотвратить от
to rely on	полагаться на
to succeed in	добиться успеха
to think of	думать о
to thank for	благодарить за

He hasn't succeeded in *finding* a job yet.
Ему еще не удалось найти работу.

She accused Jim of *lying.*
Она обвинила Джима во лжи.

Jack insisted on *going.*
Джек настаивал на том, чтобы идти.

I apologize for my late *coming.*
Прошу прощения за поздний приход.
в) после ряда предикативных выражений:

to be aware of	сознавать, отдавать себе отчет
to be afraid of	бояться чего-либо
to be astonished at	изумляться чему-либо
to be busy in (at, with)	заниматься чем-либо
to be fond of	очень нравиться, увлекаться
to be guilty of	быть виновным в чем-то заниматься чем-либо
to be interested in	интересоваться чем-либо
to be pleased with	быть довольным чем-либо
to be displeased at	быть недовольным чем-либо
to be proud of	гордиться чем-либо
to be responsible for	быть ответственным за что-либо
to be surprised at	удивляться чему-либо
to be sure of	быть уверенным в чем-то
to worth	стоить (сделать что-то)
to get used to	привыкнуть к чему-либо

She was afraid *of being wrong.*
Она боялась ошибиться.

He is busy *with packing.*
Он занимается упаковкой вещей.

The play is worth *seeing.*
Пьесу стоит посмотреть.
He was guilty *of passing* on secret papers to a foreign power.
Он был виновен в передаче секретных документов иностранной державе.

You couldn't be sure *of winning.*
Вы не могли быть уверены в победе.
4. обстоятельство с предлогами on (upon), after, before, in, by, without и др.:

He left *without* saying goodbye.
Он ушел не попрощавшись.

5. определение (обычно с предлогами of и for):

There is a risk *of catching* cold.
Существует (есть) риск простудиться.

She has a legitimate reason *for being absent* from school.
У нее есть законное основание пропустить занятия в школе.

3. 3. Временные различия герундия

Как сообщалось выше, герундий имеет формы времени и залога. Время, выраженное герундием, не абсолютное, а относительное.

Герундий в форме Indefinite (Active and Passive) выражает действие, одновременное с действием, выраженным глаголом в личной форме, и может относиться к настоящему, прошедшему и будущему.

The time for *thinking* is past, we must act at once.
Время раздумий позади, мы должны действовать немедленно.

The new way of *getting* money seemed so easy.
Новый способ раздобыть деньги казался таким простым.

Герундий в форме Perfect (Active and Passive) показывает действие, предшествующее действию, выраженному глаголом в личной форме.

Jane insists on *having seen* her father there.
Джейн настаивает на том, что видела там своего отца.

His *having made* this experiment is a known fact.
То, что он провел этот эксперимент, является известным фактом.

3. 4. Герундиальные обороты

Подобно всем неличным формам глагола, герундий образует предикативные конструкции - герундиальные обороты.

I don't like *your going* off without any money.
Мне не нравится, что ты уходишь из дому без денег.

Герундиальный оборот переводится на русский язык придаточным предложением, вводимым союзами **то, что; тем, чем**; **как и т. д.**

Именная часть герундиального оборота может быть выражена:

1. существительным в притяжательном падеже:

He was interrupted by *Richard's coming back.*
Его прервало возвращение Ричарда.

2. существительным в общем падеже:

Fansy *David courting* Emily!
Представьте себе, что Дэвид ухаживает за Эмили!

Did you ever hear *a man of sense rejecting* such an offer?
Вы когда-нибудь слышали, чтобы разумный человек отказывался от такого предложения?

Her thoughts were interrupted *by the door opening gently.*
Ее мысли были прерваны тем, что дверь тихонько открылась.

3. местоимением в притяжательном падеже:

Do you mind *my smoking?*

Вы не против, если я закурю?

His being a foreigner was bad enough.
То, что он был иностранец, было уже плохо.

I could hardly imagine *your being late.*
Мне было трудно представить себе, что ты опаздываешь.

Their having come was strange enough.
Было достаточно странно, что они пришли.

Practical Tasks

Exercise 1. Identify the structures ing-forms and give Russian equivalents of the relevant part of the sentence as shown in the following example.

Example: *Noticing relationships in this observations, the scientist attempts to classify and explain them.*
Noticing... the scientists attempts... Замечая... ученый пытается...
Noticing relationship in his observations is very important for every scientist.
Noticing... is important... Замечать... важно..

1. Establishing relationship between the phenomena of the Universe is a major task of theory. 2. Having reported of his discovery of rays of unknown nature Bequerel excited the curiosity of Maire Curie. 3. Realizing the necessity for a different approach the physicists reluctantly abandoned the project. 4. Confining his attention to one problem the scientist will surely achieve its solution much sooner. 5. Putting the discovery to use sometimes requires more effort than making it. 6. Pointing out their mistakes to some people is often quite difficult.

Exercise 2. Identify the ing-forms and give Russian equivalents of the relevant part of the sentence.
1. If you never thought of asking a question you are not interested in having the answer. 2. If you want to succeed in interesting the audience you should not try surprising them with an isolated fact. 3. By having defined one's research objective one has already made the first , and the most important step towards the final success. 4. Modern chemistry is primarily concerned with building structural bonds between the elements of matter. 5. Many useless experiments were prevented from being made by an adequate theory. 6. A true scientist is interested in being told about his mistakes. 7. Research is searching without knowing what you are going to find. 8. His research resulted in establishing a new mechanism of the process. 9. The accuracy of the instrument while being inferior to that of others is satisfactory for many industrial applications. 10. When being angry, count a hundred.

Exercise 3. Give English equivalents of the italicized parts of the sentences, using the verbs given below.

1. *Руководитель* работы всегда *настаивал на проверке* полученных результатов. 2. Такая *проверка имела целью исключить* случайные ошибки и *помогла получить* надежные *данные.* 3. *Присутствие* примеси в образцах *помешало получить* воспроизводимые *результаты.* 4. Каждое новое *открытие приводит к возникновению* новых областей исследования. 5. Коренные *изменения* в такой традиционно экспериментальной науке, как химия, *явились результатом применения* в ней квантовой теории. 6. Через несколько лет *ученому удалось получить* экспериментальные результаты, подтверждающие эту теорию. 7. *Ученые* многих стран *занимаются изучением* этого явления *и должны* в равной мере *нести ответственность за применение* его возможных результатов на практике.

to aid in; to aim at; to be concerned with; to share the responsibility for; to insist on; to prevent from; to result from; to result in; to succeed in.

Exercise 4. Identify Gerundial Constructions and give Russian equivalents of the relevant part of the sentence.

1. Mendeleev's having established a periodic law of nature has entered his name into the history book of the world science. 2. Success in science often results from the scientist's confining his attention to one problem for many years. 3. The results of the experiment depended upon his having applied the proper technique. 4. The idea of scientists' being responsible for most ills of the present day situation is unfortunately quite popular. 5. A brain-storming session consists in everybody's proposing as many, and as wild, ideas as possible, without being concerned as to whether they are workable or not. 6. Science is sometimes humorously defined as a practice of the scientist's satisfying his curiosity at the expense of the Government.

Exercise 5. Translate the following sentences into Russian.

1. It is not claimed that the research is aimed at deriving an entirely different set of axioms.
2. A bit of work was needed to establish this but once the result was accepted, it was the best instrument for exploring the atom. 3. In the early days of World War II many engineers were faced with the task of mastering the techniques of using radar. 4. Methods employed in solving a problem are strongly influenced by the research objective. 5. The inquiry could be greatly helped by distinguishing two different classes of research techniques. 6. In one's search to understand what happens in this particular case, one cannot help being influenced by the history of quite another problem. 7. The question of collective scientific discoveries has already been raised, it having been suggested that a solution of some urgent problems can be best achieved that way. 8. During such experiments interfering influences must be excluded and an artificial environment created in which the contribution of the individual components can be taken into account and possibly even measured. 9. If the scientist succeeds in confirming his repeated observations it may be stated that an empirical law or rule of nature has been discovered. 10. Let us examine various types of such mispronunciations, remembering, of course, that they are mispronunciations only in the sense of being looked upon unfavourably by cultured speakers. 11. Social

scientists and physical scientists, each group representing a diversity of specialized disciplines, were brought together to review some implications of the interaction between science and society. 12. The oceans and the atmosphere are strongly coupled systems and cannot very well be treated separately. The final circulation pattern is determined by the interaction of the two systems, each system influencing the other in a complicated cycle of events. 13. The meteorological working group concluded that meteorological research can be furthered by a trained meteorologist making observations from an orbiting station. 14. It is generally accepted that experiments in geology are far more difficult than in physics and chemistry because of the greater size of the objects and because of the geologic time scale exceeding the human time scale by a million and more times. 15. General scientific methods can be approached from a historical point of view by giving a brief account of the development of scientific concepts and theories.

Exercise 6. Translate the following sentences into Russian paying attention to Participle II.

1. Unless otherwise specified, the condition is as follows. 2. Unless otherwise stated the values used are taken in the decimal system. 3. For the voltage considered, the experiments support the conclusions and model of Dowson and Winn as opposed to the model of Wright. 4. Given the volume and the specific gravity, it is easy to calculate the weight of a body. 5. Radioactivity discovered, we made great progress in atomic physics.

§ 4. Инфинитив. Infinitive

Инфинитив - неличная форма глагола, обозначающая действие безотносительно к лицу, совершающему это действие. Природа инфинитива двойственна: он в равной степени обладает свойствами существительного и глагола. Именные признаки инфинитива проявляются в его синтаксических функциях. Подобно глаголу, инфинитив имеет такие характеристики, как время и залог.

4. 1. Формы и функции инфинитива

Таблица форм инфинитива

	Active	**Passive**
Indefinite (Simple)	to give	to be given
Continuous (Progressive)	to be giving	-
Perfect	to have given	to have been given
Perfect Continuos	to have been giving	-

Формы Indefinite и Continuous Infinitive отражают одновременность действий, выраженных инфинитивом и глаголом в личной форме:
I don't want *to wait* for you.

Я не хочу тебя ждать.
She must *be sleeping* now.
Должно быть, она сейчас спит.
Формы Perfect и Perfect Continuous Infinitive отражают предшествование одного действия другому:
I'm glad *to have done* this.
Я рад, что сделал это.
He is known *to have been living* here since 1996.
Известно, что он живет здесь с 1996 года.

Функции инфинитива в предложении

1. подлежащее:
To come to lessons on time is quite necessary.
Приходить на занятия вовремя совершенно необходимо.
2. обстоятельство цели:
To survive one must struggle for life.
Для того чтобы выжить, нужно бороться за существование.
I just call *to say* I love you.
Я просто звоню, чтобы сказать, что люблю тебя.
3. дополнение:
I really wanted *to get out* of that house pretty quick.
Я действительно хотел побыстрее уйти из этого дома.
4. определение:
This is the fence *to paint.*
Вот забор, который следует покрасить.
Higher education is a major issue *to be discussed.*
Высшее образование является основным вопросом, который необходимо обсудить.
5. часть составного сказуемого:
1) часть составного именного сказуемого *(to be+ infinitive):*
The problem is *to protect* nature.
Проблема заключается в том, чтобы защитить природу.

Подлежащее, как правило, выражено существительными типа: **function, aim, purpose, task, problem, question, stage, point и т. д.**

2) часть составного модального сказуемого:
Nature is *to be protected.*
Природу необходимо охранять.
3) часть составного глагольного сказуемого:
They began *to get jumpy.*
Они начали нервничать.

Инфинитив без частицы to употребляется:

1. после модальных глаголов **can, may, must, should** и др. и модальных выражений **should better, would rather:**
He can *swim* well.
Он умеет хорошо плавать.
You'd better *leave* me alone.

Лучше оставьте меня одну.
2. в сложном дополнении, после глаголов чувственного восприятия **see, hear, watch, feel,** а также глаголов **let** и **make:**
Let me *go.*
Отпусти меня.
I saw *him fall.*
Я видела, как он упал.

4. 2. Субъектный инфинитивный оборот (Сложное подлежащее) Subject with the Infinitive (Complex Subject). The Subjective Infinitive Construction.

Конструкция «сложное подлежащее с инфинитивом» является частью простого предложения, но построена она таким образом, что инфинитив, указывающий на действие, совершаемое подлежащим, отделен от подлежащего сказуемым. В большинстве случаев это сказуемое является формальным. Поэтому перевод предложения следует начинать с перевода сказуемого как неопределенно-личного предложения.

He is said *to know* English well.
Говорят, что он знает английский хорошо.

Существует второй способ перевода, при котором порядок слов английского предложения сохраняется.

He is believed *to perform* his duties well.
Он, как считают (считается), выполняет свои обязанности хорошо.

Сказуемое, которое разделяет подлежащее и относящийся к подлежащему инфинитив, может быть выражено:

1. глаголом в пассивном (страдательном) залоге:

is/are (was/were)	{	considered	считают
		assumed	допускают
		reported	сообщают
		supposed	предполагают
		stated	утверждают
		expected	ожидают
		known	известно
		found	установлено (обнаружено)
			и другими глаголами

He is considered *to be* a well - known economist.

1. Считают (считается), что он - хорошо известный экономист.
2. Он, как считают, хорошо известный экономист.

He is not believed *to represent* the majority.

1. Полагают, что он не представляет большинство.
2. Он, как полагают, не представляет большинство.

2. глаголом в активном (действительном) залоге:

to appear		казаться, оказаться, по-видимому
to happen	}	случайно оказаться
to chance		
to prove		в конечном счете оказаться
to seem		казаться, оказаться
to turn out		(неожиданно) оказаться

Сравните перевод следующих предложений и обратите внимание на то, какую роль в переводе выполняет форма инфинитива.

She seems *to have asked* him about it.
Кажется, она (уже) спрашивала его об этом.

She seems *to have been asked* about it.
Кажется, ее (уже) спрашивали об этом.

He appeared *to have lost* interest in the subject altogether.
Он, как оказалось, потерял всякий интерес к этому предмету.

3. глаголом to be+ прилагательное или наречие:

is/are	{	likely	вероятно
		unlikely	маловероятно
		certain	определенно, конечно
		sure	безусловно, обязательно, наверняка

He is unlikely *to occupy* this post.
Маловероятно, что он займет эту должность.

She is sure *to find* an answer to this question.
Она обязательно (безусловно) найдет ответ на этот вопрос.

Clearance sale is certain *to attract* those in need of money.

Дешевая распродажа, несомненно, привлечет нуждающихся.

4. 3. Объектный инфинитивный оборот (Сложное дополнение)
The Objective Infinitive Construction. The Objective with the Infinitive (Complex Object)

Объектный инфинитивный оборот является частью простого предложения. Эта конструкция занимает место дополнения и включает в себя объект действия или деятеля (существительное в именительном падеже или местоимение в объектном падеже) и инфинитив, который указывает на действие совершаемое или испытываемое.

They believe *the delegation to have arrived.*
Они полагают, что делегация прибыла.

На русский язык сложное дополнение с инфинитивом переводится точно так же, как и дополнительное придаточное предложение, вводимое союзами **что, чтобы, как.**

Инфинитив выполняет функцию сказуемого этого придаточного предложения и переводится глаголом в личной форме (соответствующей форме инфинитива), а стоящее перед ним существительное (или местоимение) становится подлежащим и переводится в именительном падеже.

They hope *the meeting to begin* in time.
Они надеются, что собрание начнется вовремя.

Существует определенная группа глаголов, за которыми следует «сложное дополнение с инфинитивом»:

1. после глаголов, выражающих умственную активность, мнение, суждение, предположение:

to assume		допускать, полагать
to believe	}	считать, полагать
to consider		
to expect		ожидать, надеяться
to find		находить, обнаруживать,
to know		считать
to suppose		знать
to think		полагать, предполагать
		думать

No one expected *him to return* so soon.
Никто не ожидал, что он вернется так скоро (быстро).

We suppose *them to have changed* the time - table.
Мы полагаем, что они изменили расписание.

2. после глаголов, выражающих желание:

to want to wish to desire should like (would)	хотеть, желать

Do you want me *to tell* the news?
Хочешь, чтобы я сообщил тебе новость?
I want *you to prepare* the documents for the talks.
Я хочу, чтобы вы приготовили документы для переговоров.

3. после глаголов физического восприятия и ощущения инфинитив теряет частицу **to:**

to see	видеть
to hear	слышать
to feel	чувствовать
to notice	замечать
to observe to watch	наблюдать

I saw *somebody follow* me slowly.
Я видел, как кто-то медленно следовал за мной.

I heard *mother go out* and *close* the door.
Я слышал, как мама вышла и закрыла дверь.

4. после глаголов принуждения, приказания, разрешения:

to allow to permit	позволять, разрешать
to cause	быть причиной, побуждать
to force	принуждать, заставлять
to order	приказывать, требовать

После следующих глаголов инфинитив употребляется без частицы **to:**

to make	заставлять
to let	давать возможность, позволять

Nothing could make *him stay* there.
Ничто не могло заставить его остаться.

Why didn't you let *the children go* to the movies?
Почему вы не разрешили детям пойти в кино?

4. 4. Оборот for+ Infinitive

Оборот for+ существительное или местоимение + инфинитив переводится придаточным предложением.

Five volts are needed *for the device to operate* properly.
Требуется напряжение в пять вольт (для того), чтобы этот прибор работал хорошо.

4. 5. Особенности перевода структур с глаголами to remember, to forget, to stop

Следует обратить внимание на неоднозначный перевод глаголов to remember, to forget, to stop, связанный с употреблением после них инфинитива или герундия.

1. to remember

I remembered *to lock* the door before I left.
Я помнил, что нужно закрыть дверь прежде, чем я уйду.
Please, remember *to post* the letter.
Пожалуйста, не забудь отправить письмо.
I clearly remember *locking* the door before I left.
Я точно помню, что закрыл дверь прежде, чем уйти.

2. to forget

He forgot *opening* the window.
Он забыл, что открыл окно.
He forgot *to open* the window.
Он забыл открыть окно.

3. to stop

Stop *talking!*
Замолчите!
She stopped *to talk.*
Она остановилась поговорить.

Practical Tasks

Exercise 1. A. Identify the infinitives and give Russian equivalents of the relevant part of the sentence.

1. To make a choice between these two alternatives is not an easy task. 2. To be on the safe side, take special care of the accuracy of the calculation. 3. To tell the truth, the results have no direct bearing on the problem under investigation. 4. To argue about it is not fruitful at the moment.
5. To establish cause-effect relationship between smoking and some diseases, extensive research is being carried on at several research centers. 6. To sum up, synthetic problems are studied for the possibilities which they hold for practical applications. 7. To put it another way, the experimental procedure must suit the purpose of the experiment. 8. To be able to forecast the future, we must begin by a thorough analysis of the past course of events.

B. Give English equivalents of the italicized parts of the sentences.

1. *Для того чтобы соответствовать цели эксперимента, метод должен быть прост.* 2. *Установить причинно-следственные отношения часто означает* решить проблему. 3. *Предвидеть будущее невозможно* без анализа прошлого. 4. *Говоря по правде,* все ожидали совершенно других результатов. 5. *Сделать выбор* часто *бывает самым трудным.* 6. *Чтобы не рисковать, проверьте* аппаратуру перед экспериментом еще раз.

Exercise 2. A. Identify the infinitive and give Russian equivalents of the relevant part of the sentence.

1. What we try to do is to foretell a general tendency rather than a particular development. 2. The subject is fascinating enough to suggest itself for a wide discussion by people engaged in different research areas. 3. The aim of the book is to present the case for an extensive study of this complicated phenomenon. 4. The factor is important enough to be taken into consideration. 5. To tackle such a problem with any of the techniques available before the advent of the computer would have been pointless. 6. To conclude, a definite science politics is needed if the development of science is to favor the best interests of the country. 7. To avoid making mistakes is always very difficult, because, to begin with, to err is human.

Exercise 3. A. Identify the infinitives and practice as shown in the following example.

Example: *There are new problems and complexities to be disentangled when the research range is extended.*
... new problems and complexities to be disentangled...
... new problems and complexities which are to be disentangled.

1. What are the lessons to be learned? 2. This is not an opportunity to be thrown away. 3. An interesting distinction to be made here is between problems and techniques. 4. Another factor to be taken into consideration is the power of modern

experimental techniques. 5. The rate of our knowledge growth will surely increase in the years to come. 6. Give me but one firm spot to stand on and I will move the earth.

B. Give English equivalents of:

1. Проблема, которую надо решить. 2. Фактор, который надо принять во внимание.
3. Задачи, которые стоят перед нами сегодня. 4. Сложности, которые необходимо преодолеть.

C. Distinguish between N... Ved and N... Inf. Give Russian equivalents of:

1. the data analysed - the data to be analysed; 2. the lessons learned - the lessons to be learned; 3. the choice made - the choice to be made; 4. the factor taken into consideration - the factor to be taken into consideration; 5. new complexities disentangled - new complexities to be disentangled; 6. a distinction made - a distinction to be made.

Exercise 4. Translate the following sentences paying attention to infinitives.

1. This element is to be found free in nature. 2. We are to study the main laws of physics. 3. In our experiment we were to compare the two gases. 4. Some more heating is to produce the effect required. 5. New sources of cheap energy are to be found.6. The oscillators in the spectrum analyzer must be more stable than those whose frequency is to be measured. 7. Care is to be taken not to overheat the substance. 8. Steps are to be taken to purify the substance. 9. It is to be noted that at ordinary temperature this substance dissolves only slightly. 10. Water is to be purified to meet our needs. 11. In our experiment we are to compare the relative weight of two substances. 12. Glass which is to be used for lenses must be almost colourless. 13. The object of these experiments was to find the connection between secondary electrons and the primary beta-rays from the radioactive substance. 14. The purpose of this paper is to give mathematical general meaning to the terms «pattern» and «recognition». 15. The method to be followed is based upon some peculiar properties of these rays. 16. The procedure to be followed depends upon the substance being tested. 17. There are some other groups of compounds to be mentioned. 18. Joule was the first to note this phenomenon. 19. There are only a finite number of wave numbers to characterize electronic states. 20. The method to be chosen in any particular case depends on many factors. 21. X-ray analysis is to be applied to the study of this material.

Инфинитивные обороты
Subjective Infinitive Construction
(Complex Subject)

Exercise 1. A. Identify Infinitive Construction and give the Russian translation.

1. Science is known to affect the lives of people. 2. Molecular biology is expected to dominate other sciences. 3. The results of these experiments are found to overlap. 4. The data are assumed to correlate with the present theory. 5. Some people seem to be disappointed in science. 6. He happens to work at the same problem. 7.

The work is likely to contribute to the solution of the problem. 8. He is sure to argue about it.

B. Translate sentences into English using Complex Subject.

1. Это, по всей вероятности, окажет влияние на дальнейшие события. 2. Результаты оказались в хорошем соответствии с теорией. 3. Решение этой проблемы, как известно, зависит от многих факторов. 4. Ожидается, что работа будет закончена в этом месяце. 5. Известно, что он работает над этой проблемой. 6. Он, как известно, закончил работу над этой проблемой.

Exercise 2. A. Learn to distinguish between indefinite and perfect infinitives.

Translate the sentences into Russian.

1. He is said to have graduated from Oxford University. He is said to avoid all sorts of arguments. 2. They seem to have taken advantage of the favourable conditions. He seems to mention the problem in the last chapter of his book. 3. He appeared to have lost interest in physics altogether. The story may appear to be oversimplified. 4. He is known to have established a school of his own. 5. This scientist is known to keep in touch with the latest developments in his field of research.

B. Translate the sentences into Russian (mind the negation).

1. He does not appear to be concerned with the problem. 2. He was not expected to spoil the sample. 3. The human body is not likely to tolerate such temperature. 4. He is not believed to represent the majority. 5. The idea does not seem to be remarkably advanced. 6. The discussion is not claimed to cover the whole range of present-day research.

Exercise 3. Translate the following sentences paying attention to Subjective Infinitive Construction.

1. The new method is believed to have given good results. 2. The result was expected to agree with theoretical predictions. 3. Only a limited number of reactions are known to be influenced by light. 4. At the end of the reaction the substance will be found to consist of two elements. 5. An alternative point of view, however, turned out to be more useful. 6. Alpha-rays were found to be merely positively charged helium atoms. 7. If a particle moves in a circle with constant speed, it is said to be in uniform motion. 8. The simplest of these two atoms is thought to have a nucleus of three protons and four neutrons. 9. The chief difficulty turned out to be the determination of the formulae of the compounds. 10. Natural uranium has been stated to consist mainly of two isotopes. 11. This law does not seem to hold for all gases. 12. There does not appear to be an agreement between the results.

Objective Infinitive Construction
(Complex Object)

Exercise 1. A. Identify Infinitive Construction and give the Russian translation.
1. One can assume this to be self-evident. 2. One can expect the scope of research to expand steadily. 3. Most people believe the amount of effort in science to be somehow correlated with the standard of living in the country. 4. Nowadays we see many new areas of research come into being as a result of unexpected break-throughs. 5. One can watch more and more people move into biology from other areas of research. 6. The present-day situation forces more and more countries to start contributing to this field of research. 7. An efficient laboratory head always knows how to get his people to do their work properly and on time. 8. If one is really interested in science, one does not like any problem, however difficult, to be left unsolved. 9. One will naturally think such course of events to be disastrous not only for science but for the future of mankind.

Exercise 2. Learn to distinguish between indefinite and perfect infinitives. Translate the sentences into Russian.
1. The history of the last 30 years shows him to have done very well. 2. We know him to have established a school of his own. 3. We do not expect him to throw away an opportunity like this. 4. We know him to have objected to this style of research on previous occasions. 5. They considered all water or the surface of this planet to have been liberated by volcanic action.

Exercise 3. Translate the following sentences paying attention to Objective Infinitive Construction.
1. Experiments have proved the pressure of a gas at fixed temperature to depend on its concentration. 2. We have thought this law to hold only for gases which are under normal conditions. 3. One may safely expect this prediction to be quite reliable. 4. On assuming the body with the mass *m* to be acted upon by force f, let us calculate the acceleration. 5. They found radon to be 3 times as heavy as hydrogen. 6. Let us take the volume of this body to equal *v*. 7. We consider this work to be the most serious attempt made to interpret experimental results in terms of «band tail» theory.

APPENDIX I

TIPS FOR TRANSLATION

Главной задачей любого перевода является передача содержания подлинника средствами другого языка с соблюдением строя последнего и, по возможности, с сохранением стиля оригинала. Необходимо понять, насколько допустимо в русском (английском) языке то или иное словосочетание, правильно ли «звучит» предложение на фоне общего контекста. Для того, чтобы перевод был литературным и в то же время точным, необходимо сочетать два подхода к переводу текста. Первый - буквальный, максимально приближенный к тексту, второй – это литературная обработка текста. Первый способствует глубокому пониманию оригинала текста, второй позволяет убрать «лишние» слова, добавить нужные, эквивалента которым нет в подлиннике.

Чтобы перевод получился литературным и точным, необходимо провести работу над текстом в несколько этапов:

1. Прочтите текст первый раз без словаря, составьте общее представление о ком или о чём идёт речь, место действия, время действия и т.п.
2. Повторное чтение поможет более точно определить незнакомые слова, уяснить детали повествования. На этом этапе можно составить список незнакомых слов. Опасайтесь «ложных друзей переводчика», слов, которые при внешнем сходстве расходятся по своему значению.

Actual	Фактический (но не актуальный)
Especially	Особенно (но не специально)
Intelligent	Умный (но не интеллигентный)
Prospect	Перспектива (но не проспект) и др.

3. Работа со словарём – следующий этап. Значительные трудности при переводе вызывает многозначность слов, когда бывает непросто подобрать нужное значение слова для данного контекста. Например, cash, bus, clock- компьютерные термины. Запомните! Переводу подлежат не слова, а понятия и значения слов. Текст не является простой суммой слов, поэтому необходим следующий этап работы над переводом текста.
4. Синтаксический анализ предложения.
5. Написание черновика перевода. На этом этапе можно собрать всё, что Вы обнаружили в словаре, записать несколько вариантов перевода, вычеркнуть лишнее и добавить слова или словосочетания, характерные для русского или английского языка.
6. Заключительный этап работы – составление текста перевода. Постарайтесь придать ему литературную форму, но не забывайте о близких к оригиналу формулировках. Ваш перевод должен показать Ваше умение хорошо формировать высказывание на русском или английском языке и Вашу способность глубоко понимать иноязычный текст.

Пример:

An Imaginary Tour

Architects can now “walk” clients through a new building long before the foundation is even poured-thanks to new computer-aided design programs. Clients have the opportunity to make changes and to see the results almost instantly. Want three windows rather than two? Wonder what the room would look like if the door was a little to the left? How would the room “feel” if the walls were brick rather than wood? Today it’s no problem.

The process of building a model of a room on a computer has several stages. First the architect sets the objects in space and defines their characteristics, such as shape of surface finish. Then a perspective of the room is chosen so the computer can orient the view it will create. What can and cannot be seen must be calculated, as well as angle, reflections, color, and intensity of light. The result can either be viewed on a computer screen, printed, or put directly onto a color side. The program can also let people “walk” through famous buildings on the other side of the world.

Воображаемое путешествие

Архитекторы могут теперь «гулять» вместе с клиентами по новому зданию задолго до закладки фундамента - благодаря новым ПАП. Клиенты имеют возможность вносить изменения и почти немедленно видеть результат. Хотите три окна вместо двух? Интересно, как выглядела бы комната, если дверь немного переместить влево? Как бы комната «чувствовалась», если бы стены были кирпичные, а не деревянные? Сегодня это не проблема.

Процесс создания компьютерной модели комнаты имеет несколько стадий. Сначала архитектор устанавливает объекты в пространстве и определяет их характеристики, например тип отделки поверхности. Когда перспектива комнаты выбрана, компьютер может показать, как будет выглядеть созданная им комната. Видимое и невидимое должно быть рассчитано точно также как угол, отблески, цвет и интенсивность света. Результат можно посмотреть на экране компьютера, напечатать или поместить прямо на цветной слайд. Программа также позволяет людям «гулять» по знаменитым сооружениям, даже если они расположены на другом конце света.

TEXTS FOR TRANSLATION

Critical Response to the iPad

At first glance, the iPad looks like an iPhone or iPod touch on steroids. It’s much larger than those two related devices, yet smaller than a notebook computer.

Only time will tell whether the iPad becomes a success or another one of Apple’s brilliant ideas gone awry. Media outlets have weighed in and had plenty to say. Some question the device’s utility, especially considering the iPad is not more significantly functional than an iPhone. The iPad is still limited to operating one application at a time. You can’t run multiple tasks like you can with a PC. This limits its productivity

and, in essence, relegates the iPad to nothing more than a digital reader with Internet and multimedia capabilities. That being said, it still can be used for note taking and some productivity thanks to Apple's decision to make the iWork productivity suite of Keynote, Pages and Numbers available for the device for an extra cost. Still, you can't run Microsoft World (although you can open and read World documents), nor can you run advanced programs such as Photoshop and InDesign like you'd run on your PC.

Like every other portable device in Apple's line, you can't replace the iPad's battery. Should you get to the end of the iPad battery's lifespan, which Apple estimates is around five years, you would send your device to Apple for a replacement at a cost of $99. that may not be so bad, considering batteries are usually expensive for portable devices and five years is much longer than you'd get out of many batteries in other devices.

What is Virtualization?

Virtualization is a proven software technology that is rapidly transforming the IT landscape and fundamentally changing the way that people compute. Today's powerful x86 computer hardware was designed to run a single operating system and a single application. This leaves most machines vastly underutilized. Virtualization lets you run multiple virtual machines on a single physical machine, sharing the resources of that single computer across multiple environments. Different virtual machines can run different operating systems and multiple applications on the same physical computer. While others are leaping aboard the virtualization bandwagon now, VMware is the market leader in virtualization. The technology is production-proven, used by more than 170,000 customers.

Virtualization was first developed in the 1960s to partition large, mainframe hardware for better hardware utilization. Today, computers based on x86 architecture are faced with the same problems of rigidity and underutilization that mainframes faced in the 1960s. VMware invented virtualization for the x86 platform in the 1990s to address underutilization and other issues, overcoming many challenges in the process. Today, VMware is the global leader in x86 Virtualization.

Introduction to How Stealth Bombers Work

The B-2 bomber, commonly known as the stealth bomber, was an ambitious project, to say the least. In the 1970s, the US military wanted a replacement for the aging B-52 bomber. They needed a plane that could carry nuclear bombs across the globe, to the Soviet Union, in only a few hours. And they wanted it to be nearly invisible to enemy sensors.

As you might expect, hiding a giant plane is no easy task. Northrop Grumman, the defense firm that won the bomber contract, spent billions of dollars and nearly 10 years developing the top secret project. The finished product is a revolutionary machine - a 172-foot wide flying wings that looks like an insect to radar scanners! The craft is also revolutionary from an aeronautics perspective: It doesn't have any of the standard stabilizing systems you find on a conventional airplane, but pilots say it flies as smoothly as fighter jet.

The B-2 bomber has a completely different design: It’s one big wing, like a boomerang.

This flying wing design is much more efficient than a conventional plane. Instead of separate wings supporting all the weight of the fuselage, the entire craft works to generate lift. Eliminating the tail and fuselage also reduces drag – the total force of air resistance acting on the plane.

Greater efficiency helps the B-2 travel long distances in a short period of time. It’s not the fastest craft around - the military says it’s high subsonic, meaning its top speed is just under the speed of sound (around 1,000 ft/sec or 305 m/s) – but it can go 6,900 miles (11,000 km) without refueling and 11,500 miles (18,500 km) with one in-flight refueling. It can get anywhere on the Earth on short notice.

APPENDIX II

Assessment Criteria

Your presentation will be evaluated and marked (graded). Some of the specific aspects of the presentation that your teacher may critique include:

I. Delivery

A. Volume of Voice (Did you speak loud enough to be easily heard?)

B. Rate of Speech (Did you speak slow enough to be clearly understood?)

C. Pausing

D. Eye Contact

II. Structure

A. Introduction (who, why, what, how)

B. Organization of ideas (appropriate linking words and phrases)

C. Signposting

D. Sufficient Persuasive Support/Example

E. Summary of Main Points

F. Conclusion

III.Use of visual aids

IV. Rhetorical techniques

V. Accuracy (mistakes in)

A. Pronunciation

B. The use of grammar

C. The use of vocabulary

VI. Confidence and enthusiasm.

APPENDIX III

The Feedback Form. Full Presentation

	Poor	OK	Yes!	Wow	Comments
Introduction Who Why What How Variety					
Signposting					
Structuring					
Delivery Pausing Pacing Stressing					
Conclusion Signal Summary Conclusion/Recommendation Closing Remarks					

APPENDIX IV

Speech Preparation Worksheet

Use the following worksheet in preparation of your speech.
The purpose of the above worksheet is to start you thinking about the kind of information you will need and how you will organize material for your speech. We expect that you will change the information on your worksheet several times. That's natural. After you are really pleased with it, you are ready to prepare your working outline.

1. Decide on a possible topic that is relevant to your work, company, research or interests.

_____

_____

_____

2. Divide your topic into two or three important points to discuss in the main body of your speech.
Point 1:

_____

_____

Point 2:

_____

_____

_____

Point 3:

_____

_____

_____

3. Prepare your interesting attention-getting opening.

_____

_____

_____

4. Prepare a preview of the main points you will talk about.

_____

_____

_____

_____

5. Main body

Point 1.

_____

(write your supporting information for Point 1 below)

_____

_____

Point 2:

_____

(write your supporting information for Point 2 below)

Point 3:

_____

(write your supporting information for Point 3 below)

_____

_____

6. Describe possible visual aids you could use to help the audience see and experience what you are
talking about.

_____

_____

_____

7. Prepare a summary of the main points in the body of your speech.

_____

_____

8. Prepare a conclusion.

_____

_____

APPENDIX V
Checklists for Preparation and Presentation

Preparation
Checklist-Organization
Date and time:

_____
Length of time for talk:

_____
Questions at the end? If yes, length of time for questions:

_____

_____
Equipment needed:

_____
Is it available? ☐ Does it work? ☐
Audience

Number of people 1-5 6-15 16-30 over 30
How much do they know about a topic? Nothing a bit a lot
How well do I know them? Not at all a little quite well

How formal? Very formal formal informal
Nationality/Culture Same as me international

Handouts no ☐
Yes/before talk ☐ at the end of talk ☐ later ☐
(intranet/email)

Checklists-Contents

Topic:

_____

_____
Three main points
1._____
2._____
3._____
Purpose of talk (what do I want to do?)
☐ Inform the audience
☐ Persuade the audience
☐ Sell something to the audience
☐ Train the audience
Importance to audience:

What do I want audience to know by the end of talk:

_____

Preparing visuals
How many visuals will I have?
Do they say (or show) what I want to say? ☐
Are they clear and simple to understand? ☐
Will the audience be able to read them (size and colours)? ☐
Do they have effective headlines? ☐
Is there as little text as possible? ☐
Have I remembered the rule of six. ☐

Presentation

Checklist for Introduction

1. Welcome audience.
2. Introduce yourself (name, position/function).
3. State your topic.
4. Say why your topic is important for the audience.
5. Describe the structure of your talk (the main points and when you will be cleaning with them).
6. Say how long the talk will be.
7. Say when you will answer questions.
8. Say whether there are handouts.

Checklist for the main part of a presentation

1. Briefly state your topic and objective(s).
2. Signal the beginning of each part.
3. Talk about your topic.
4. Signal the end of each part.
5. Highlight the main points.
6. Outline the main points. (Summarize the main ideas)
7. Signal the end of the main part.

Checklist for Conclusions

1. Signal the end of your talk.
2. Summarize the key points.
3. Highlight one important point.
4. Explain the significance.
5. Make your final statement.
6. Invite questions.

Checklist for using visuals

1. Start by telling your audience what the visual illustrates.
2. Explain it if necessary.
3. Highlight the key points.
4. Say why these points are important (and explain the cause and effect).
5. Use different verbs to express movement/development.

APPENDIX VI

Phrase Bank

This Phrase Bank provides key expressions for structuring presentations effectively. These are organized by topic and purpose, reflecting the syllabus of the course. The phrase bank can be used as a study resource and as a handy reference when making real presentations.

Getting Started

Introductory Section	Formal/Neutral	Informal
Welcoming a speaker	I'd like to introduce … I'd like to welcome … It's a pleasure to welcome … On behalf of …, may I welcome to …	It's good to have … here
Thanking someone	Thank you for giving me this opportunity to speak to you today. Thank you. I'm glad to be here.	Thanks. It's great to be here.
Greeting people	Good evening, ladies and gentlemen. Hello. Thank you all for coming.	Morning everyone. Welcome. Hello. It's good to see you all here. Thanks for coming.
Getting people's attention	Perhaps we should begin. Fine. If we are all here, I'll begin. Right. If everyone's ready, let's start.	Ok, let's get started. Ok, let's make a start.
Introducing yourself	Let me introduce myself. I'm … Before I continue, let me tell you something about myself. My name is … For those who don't know me, my name is … and I'm the managing director. I'm responsible for …	As you know, I'm … I'm in charge of … I'm Senior Sales Executive.
Effective Openings	Suppose … How would you… Statistics show that …	On the way here, I saw … A funny thing happened to me the other day …

	According to the latest study, I noticed in the news last weak	You know, … When I think about … I'm reminded of … Did you know that … How many of you hate …? Raise you hands. Thanks.
Explaining why you are talking (Stating your purpose)	I've been asked to speak to you about … My purpose today is to … My objective today is to … Sam … asked me to present my ideas … I promised to report the results of our survey to you. Today I'd like to talk about … This morning I'm going to be talking to you about … Today I would like to give you a general overview of … Today I'm going to report on the results of … Today I'll be showing you how to deal with … This afternoon we will be exploring … In my presentation today I'll be outlining …	What I want to do this morning is … The reason we are here today is to … What I am going to do today is to review … There are some important issues I want to go through this morning …
Outlining a presentation	So, I'll begin by filling you in on the background to (the project). … and then I'll go on to highlight what I see as the main … I'm going to develop three main points. First, … Second, …Third, … I've divided my presentation into three main points. I would like	I want to start with … And then … lastly … First, I want to focus on … After that I … Finally, I want to outline …

	to begin with … I would like to start by bringing you up-to-date on (with) the latest findings of the study and then I'll go on to discuss in more depth the implications of … So, I'll be addressing three main points and the first point is going to be … The second point will be … And finally the last point is …	
Stating what the audience need to do Questions Handouts	If you have any questions, I'd be grateful if you could leave them until the end. Perhaps we can leave any questions you may have until the end of the presentation. If you have any questions you'd like to ask, I'll be happy to answer them. Please feel free to interrupt me at any time if you have a question… I'll pass round copies of my slides so you can make notes as I go through the presentation… You don't need to take notes as we'll be handing out presentation booklets. I have copies of the statistics and tables. I'll give these to you later. The figures are on a sheet which you can have later.	I'm happy to take any questions after that … Please feel free to ask questions as we go along … Please save any questions for the end of the talk. I'm happy to answer any questions as I talk. Don't worry, there'll be plenty of time left over the questions at the end. If you have any questions, please feel free to stop me. Don't worry about taking notes while I talk. I have a handout with the main points of my presentation, which I'll give you after end. Before I start, I have a handout for you. Would you like to take one? Here you are. Please feel free to give me your feedback.

Timing	You all have a copy of the handout with the graphs and statistics. Here are some tables which illustrate what I'm saying. I have copies of these and the statistics I've mentioned on this handout. Here you are. Please take one each and pass them round. Did everyone get a copy? Would you like one of these? Would you like to take one of these as I pass them round? Please take a leaflet. Help yourselves to a brochure. Please make comments as I talk. The presentation should last about five minutes. It will take about 20 minutes to cover these issues. My presentation will take about 30 minutes. This will take about thirty to forty minutes.	This won't take me more than …

Main Section

Linking words	
Sequence	Firstly, … Secondly, … Finally, … First (of all) … Then …. Next …. Finally/Lastly ….
Generalizing	In general, …. On the whole, … Usually, … As a rule, … Typically, … Basically, …. Broadly speaking, ….Briefly, …. To put it briefly, …

Contrast	But, ….However, ….Nevertheless, ….On the other hand, ….. Still, …Yet, … Even so,… Although, …Even though, …Though, …. In spite of the fact that, … Despite the fact that, … While, ….
Adding another point	In addition, … Moreover, … What is more, … Furthermore, …Apart from this/that, In addition (to this), … Besides (this), …
Examples	For example, … For instance, … Such as, …. Like, … Particularly, … In particular,… Especially, ….
Alternatives	Either …or…Alternatively, … Instead of…
Real (surprising) situation	In fact, … Actually, … As a matter of fact, … In practice, … Indeed, …
Something is obvious	Clearly, …Obviously, …Of course, …Naturally, …Needless to say, …
Clarifying /rephrasing	In other words, …That is today, … To put it another way, ….
Advantages and disadvantages	One advantage of … Another advantage of … A further advantage of … The main advantage of … The greatest advantage of … The benefits of … One disadvantage of … Another disadvantage of … One of the drawbacks of … Pros and cons of … The advantages and disadvantages of …
Expressing cause	Because of … Owing to (the fact that) … Due to (the fact that) … Since … As ….For this reason …
Expressing effect/result	Thus, …Therefore, …So, …As a result, … As a consequence, … Consequently, …
Purpose	With the purpose/intention of … In order to … So that….
Personal opinion	In my opinion/view … As far as I am concerned … I think that … To my mind ….

Partially true statements	Up to a point, … To some extent, … To some degree, … In a sense, … In a way, …
Expressing limited knowledge	As far as I know … To the best of my knowledge …
Referring to some sources	According to … With reference to ….
Similarity	Similarly, …. In the same way …
Summarizing	Briefly, … To put it briefly, … In short, …
Concluding	On balance, … For the above mentioned reasons, … To sum up, … All things considered, … Taking everything into account/consideration, … In conclusion, … Taking all the above points into consideration, …

Signposting (transitions)

Making your next point (changing from one subjects to another)	Moving on to the question of … Let me move on to the next question/issue My next point is … As far as … is /are concerned … Now that we have explored the … I'd like to move on to … Let's turn to the advantage of … I'd now like to change direction and talk about … I'd like to turn to … Now, turning to …
Referring to an earlier point	Let's go back to the question of … Going back for a moment to the situation … To go back to the main reasons for … Let's go back for a moment to what we were discussing earlier … I said earlier that … In my last point, I mentioned that … As I've already explained … At the beginning of the talk I said …
Repeating the mean point	I'd like to recap on the main points … So, let's recap on that … Let me just recap what's been said so far…
Giving a wider perspective (more details, new information)	I'd like to expand on that a little before we move on. Let me expand on some of the main points … To elaborate on that a little for those who aren't familiar with …

Moving away from the main subject	To digress for a moment, let's consider … To move off the point for a moment …
Emphasizing your points	What's especially important is … I'd like to emphasize (stress) The main thing is … What I really want to stress is …
Explaining the meaning of abbreviations	WTO stands for World Trade Organization

Exploiting visuals

Asking listeners to look at your visuals	Have/take a look at this graph. The vertical axis shows …and the horizontal axis represents … As you can see from the slide/graph/chart You can see from this slide that I'm going to cover three main points. I'll leave this up as I talk so that you can follow the points. This slide shows … From this graph you can see… Each line indicates … You can see from the key which line represents … For example, the dotted line shows … This table shows … The unbroken line shows … The broken line represents … The bar charts shown here indicate …
Commenting on the content of a visual	Look at the following pie-charts showing … I'd like to focus our attention on … This chart compares … I would like to concentrate on this green column … I'd like to draw your attention to … Looking at this graph it is interesting to note … As you may have noticed … Looking at the trend in sales during that time, you can see … The two diagrams give figures … If you look at it more closely, you'll notice … I'd like us to look at … in more detail. Let's move on now and look at the figures for … Let's move on to the statistics. I'd like to point out that … What is interesting/important/warring/surprising/of concern here is …

Concluding

Making a final point (signal)	As a final point, let me raise a general issue. As a final point, I'd like … So, that brings me to the end of my presentation … So, that completes our presentation. Well, that covers everything I want to say. To conclude, I'd like to introduce one final point.
Summarizing main points	So, to sum up, first I outlined the problem that we face and I gave three reasons for this problem. I then presented … Let me summarize what we've looked at. I'll briefly summarize the main issues. I'd like to summarize. Let me just go over the key points again. To sum up … In this presentation I wanted to explore … To summarize, I'll run through my three topics. I'll briefly summarize the main issues. I'd like to conclude by strongly recommending … Following what I have said today, I recommend that … To quote a well-known business leader, … As Bill Gates once said, … I hope to have been able to show that the effect of … This does of course highlight the need for further research in the area of …
Closing remarks	Thank you for your attention. Thank you for listening. Many thanks for coming. If you have any questions, I'd be happy to answer them. Are there any questions or comments? I'd welcome your comments. I'll now hand out …
Telling people how to contact you.	If you need to contact me, my email address and work number are on the screen. Please feel free to contact me. It would be useful to have your feedback. You are welcome to get in touch. Please email me if you have any questions.

Language focus

<table>
<tr>
<td>The language of cause and effect</td>
<td>X causes Y/Y is caused by Y
X is a (common) cause of Y
X results in Y/Y result from X
X leads to Y
X makes Y do something
X contributes to Y
X, and so Y
X, therefore Y
Thanks to X, Y
The effects of X are Y
X is explained by Y
X is a source of Y
Since X, Y
Y is (largely) due to X
Y is (partly) because of X
The more/less the X, the more/less the Y</td>
</tr>
<tr>
<td>The language of Comparison and Contrast
Using more … than

Using as …as

Phrases with superlatives

Phrases useful for comparing things</td>
<td>Product A Product B
$220 $200 A is a bit/a little/slightly more expensive than B
$300 $200 A is considerably/much/a lot/far more expensive than B
$120 $200 A is not nearly as expensive as B.
$180 $200 A is almost/nearly as expensive as B
$400 $200 A is twice as expensive as B
$450 $200 A is more than twice as expensive as B

A$100 C is (by far) the most expensive of all
B$150 A is (by far) the least expensive in
C$350 the group.</td>
</tr>
</table>

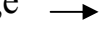
	Exactly/just/almost/nearly/ virtually/more/or less/roughly the same … as Exactly/just/very/more/less/quite/a bit/a little like Completely/quite/slightly different from Compared to/in comparison with /very similar to

The language of Change

Describing trends in graphs

up 	
noun	verb
an increase a rise an improvement a growth	to increase to rise to improve to grow to go up to take off to shoot up

down 	
noun	verb
a fall a drop a decline	to fall to drop to decline to go down to fall off to plunge to slamp

no change 	
to remain stable (steady) to level off to stay at the same level to be flat to stabilize	to peak to reach a peak

	
to reach a low	to fluctuate

Key phrases	point / to hit a low and then level off to rise from 1 m to 3 m to fall from 5 m to 4 m to increase by 50% to drop by 10% an increase in sales of 1 m
Useful phrases with nouns Useful phrases with verbs	a rapid/sharp/dramatic/substantial (increase) a slow/gradual/steady (decline) a great/large/considerable (rise) a small/slight (drop) to (increase) rapidly/sharply/dramatically/ substantially/slowly etc. to double/triple/quadruple

Numbers and Approximations

Currencies Temperatures Decimals Percentage Fractions Large numbers	\$6.50 six dollars fifty (cents) £ 6/15 six pounds fifteen €57.25 fifty-seven Euros twenty-five cents 4.3°C four point three degrees Centigrade 6.5 six point 5 0,25 naught/zero point two five 2.50 two point five oh 84 percent of employees … ½ half/ a half /one-half ⅓ a third/one third ¼ quarter/ a quarter/one quarter ⅛ an eighth/one-eighth ¾ three quarters $^{4}/_{5}$ four fifths 250 two hundred and fifty 2500 two thousand five hundred (you can also say twenty five hundred) 2580 two thousand five hundred and eighty 25000 twenty-five thousand

	250000 two hundred and fifty thousand 2500000 two million five hundred thousand (or two and a half million)
Approximate numbers	About/approximately/roughly Just over/a little more than/more than Less than/ just under/under
Dates	1066 ten sixty-six 1984 nineteen eighty-four 2009 two thousand and nine

APPENDIX VII

ABBREVIATIONS AND FORMULAS

(Units common for scientific literature)

about	около; приблизительно
above	выше; над; сверх; вышеописанный
accordingly	таким образом; соответственно; поэтому
according to	согласно
account for	отвечать; объяснить
a few	несколько
aforementioned	вышеупомянутый
after a while	через некоторое время
after the manner	по способу
again	снова; опять
against	против; к
a great deal of	много
ahead of time	заблаговременно
alarmed by	обеспокоенный
a little	немного
all at once	неожиданно
along with	одновременно; наряду; вместе с
a lot of	много
a. m. (ante meridiem)	*(во столько-то часов}* до полудня
and in particular	и в частности
and so forth	и так далее
and so on	
and the like	и тому подобное
a number of	несколько; ряд
any longer	уже; больше не
apart	на расстоянии; врозь
apart from	помимо; кроме

as	как; так как; когда; тогда когда; по мере того как; в качестве
as a matter of fact	на самом деле; фактически, собственно говоря
as an alternative	вместо
as appropriate	**соответственно**

as a result	**в результате**
as a rule	как правило
as a whole	в целом
as early as	уже; еще
as…as	так же, как и
as close as possible	как можно точнее
as compared with	по сравнению
as far as … is concerned	что касается
as for	что касается; относительно; вплоть до
as high as	так же высоко, как
aside from	помимо; кроме
as if	как будто
as in the case	как в случае с; как обстоит дело
as long as	поскольку; до тех пор, пока
as many as **as much as**	сколько; столько … сколько; в количестве
as regards	что касается
as short as possible	как можно короче
as soon as	как только
as soon as possible	как можно скорее
as to	что касается
as well	также
as well as	так же как; а также и
as yet	до сих пор
at	при; в, на

at all	вообще; совсем
at all events	при всех условиях; во всяком случае
at a glance	сразу; с первого взгляда
at any rate	по крайней мере; во всяком случае
at a time	одновременно
at first	сначала
at first glance	на первый взгляд
at issue	рассматриваемый
at last	наконец
at least	по крайней мере
at once	тут же; сразу же
at present	в настоящее время
at random	наугад; произвольно
at the request	по просьбе
at the cost	за счет
at the same time	в то же самое время
at will	по желанию; произвольно
aware of	отдавая себе отчет
back and forth	взад и вперед
be alike	быть похожим
bear in mind	иметь в виду; помнить
bearing in mind	принимая во внимание, учитывая
because	потому что; так как
because of	вследствие; из-за; по причине
become effective	входить в силу
be concerned with	касаться; иметь дело
be due to	обуславливаться
before long	вскоре; скоро
be like	быть подобным
be likely	вероятно
be of (no) use	быть (бес) полезным
be of the opinion	выражать мнение
be responsible for	объяснять; являться причиной

besides	кроме того; помимо
beyond doubt	несомненно
beyond question	вне сомнения
both	оба
both ... and	как ..., так и; и ... и
but	кроме; но; только
but for	если бы не
by all means	непременно; обязательно
by chance	случайно
by correspondence	путем переписки
by far	непосредственно; немного
by hand	вручную
by means of	при помощи; посредством;путем
by no means	никоим образом; ни в коем случае
by reason of	вследствие; из-за
by reference to	ссылаясь на; относительно; что касается
by some means or other	тем или иным способом
by then	к тому времени
by the way	между прочим
by turns	по очереди
by virtue of	в силу; благодаря; посредством
by way of	посредством; с целью
come to term with	прийти к соглашению с кем-либо
compatible with	совместимый
concerned at	озабоченный
concerning	относительно
conform with	соответствовать
consequently	поэтому; следовательно
consideration should be given to	следует обратить внимание на
deal with	иметь дело; рассматривать
depending on	зависящий; в зависимости от

despite	несмотря на
down to	вплоть до
due	должный; надлежащий
due to	вследствие; по причине; благодаря: из-за: в силу
either	любой, каждый (из двух)
either… or	или…или, либо…либо
emphasizing	подчеркивая
end to end	непрерывный
entry into force	вступление в силу
even	даже, ровный, четный
even if	если даже
ever since	с того времени, с тех пор
every bit	во всех отношениях, во всяком случае
every now and then	то и дело, время от времени
every so often	время от времени
except	кроме, кроме как
except for	за исключением, кроме
exceptionally	в виде исключения
except that	кроме того, что; за исключением того, что
exclusive of	не считая, исключая
far less	гораздо меньше
far more	значительно больше
few	мало
figure of merit	коэффициент качества
first	первый, сначала, во-первых
first of all	прежде всего
first rate	первоклассный
for	для, за, в течение, так как
for all that	несмотря на все то
for consideration	для рассмотрения
forever	навсегда, вечно

for example	например
for instance	например
for lack of	из-за отсутствия
former	первый
for once	на этот раз, в виде исключения
for preference	предпочтительно
for short	короче, для краткости
for that purpose	для этой цели
for the first time	впервые
for the rest	в остальном
for the sake of	ради, во имя
for the time being	на время, пока
for this reason	по этой причине
for want of	из-за недостатка
from time to time	время от времени
further	дальше, еще, следующий, кроме того
furthermore	более того
further on	дальше
general	общий, главный
generally speaking	вообще говоря
get rid of	освобождаться от
give rise to	вызывать, иметь результатом
go into operation	вступать в действие
greatly	очень, в значительной степени
half and half	пополам
half as much	в два раза меньше
have nothing to do with	не касаться; не иметь никакого отношения
having considered	приняв во внимание
having endorsed	одобрив
having examined	рассмотрев
having expressed	выразив

having regard to	принимая во внимание
having taken note	приняв к сведению
hence	следовательно
hereafter	в будущем
hereat	при этом
herein	в этом; здесь
hereinafter	ниже; в дальнейшем
hereof	отсюда; из этого
hereto	к этому
hereupon	вслед за этим; после этого
herewith	посредством этого; настоящим
highly	весьма
however	однако
if any	если таковые вообще встречаются
if at all	если это вообще будет
if ever	если когда-либо это бывает
if everything	если что-либо и бывает
if only	если бы только
in accordance with	в соответствии с;согласно
in addition to	кроме того; в дополнение к
in advance	заранее; вперед
in any event	так или иначе; в любом случае
inasmuch	ввиду того, что
in behalf of	для; ради
in case	в случае, если
in certain respect	в некотором отношении
in common with	совместно
in comparison to (with)	по сравнению с
in compliance with	в соответствии с
in conformity with	в соответствии с
in conjunction with	в связи с

in connection with	в связи с
in consequence of	в результате; вследствие
in contrast	в противоположность (этому)
in detail	подробно
in due time	в свое время
in effect	в действительности; в сущности
in evidence	заметный
in excess of	больше, чем
in fact	действительно; на самом деле
in favour (of)	в пользу
in force	(находиться) в силе
in front of	перед; впереди
in general	вообще
in honour of	в честь кого-либо
in its entirety	полностью
in its turn	в свою очередь
in line with	в соответствии
in many respects	во многих отношениях
in mind	помнить; иметь в виду
in my eyes	по-моему; на мой взгляд
in no case	ни в коем случае
in no time	моментально
in order	в порядке; для того, чтобы
in other words	другими словами
in outline	в общих чертах
in part	частично
in particular	в особенности; в частности
in place of	вместо
in point	рассматриваемый
in proportion to	пропорционально
in pursuance of	согласно чему-либо;выполняя что-либо
in quantity	в большом количестве

in question	о котором идет речь; рассматриваемый; обсуждаемый
in reference to	ссылаясь на; относительно
in regard to	относительно; в отношении
in relation to	относительно
in respect of	что касается; в отношении
in response to	в ответ на
in sequence **in series**	последовательный, подряд
in short	короче говоря
in spite of	несмотря на
instead of	вместо того, чтобы
in step	синхронно
in succession	последовательно
in such a way	таким способом
in terms of	в виде; на основе; в единицах; в выражениях
in the connection with	в связи с этим
in the course of	в процессе; в ходе
in the event of	в случае
in the limit of	в пределах; ограниченно
in the long run	в конце концов
in the main	в основном
in this way	таким образом
in time	вовремя
in turn	в свою очередь; по очереди
in use	используемый
in view of	ввиду; принимая во внимание; с целью
in virtue of	посредством; благодаря
irrespective of	безотносительно
it follows	отсюда (следует)
it goes without saying	само собой разумеется

it is high time	давно пора
it is necessary	необходимо
it is no wonder	неудивительно
it is of interest	интересно
it is safe to say	можно с уверенностью сказать
it is to be noted	необходимо заметить
it is unlikely	маловероятно
it stands to reason	ясно; очевидно
it will be noted	следует отметить
just in time	как раз вовремя
just the same	все равно; одно и то же
keep in mind	помнить; иметь в виду
keeping in mind	имея в виду; принимая во внимание
kind of	своего рода
last	последний; прошлый
last but one	предпоследний
least	наименьший; в наименьшей степени; менее всего
liable	подверженный; подлежащий
like	похожий; одинаковый; подобный
likely	вероятно; вероятный
little	маленький; мало
make terms with	прийти к соглашению
matter	вопрос; дело
mean	средний; означать
means	средство; означает
meet demand	отвечать требованиям; удовлетворять нужды;
merely	только; единственно
minute	мельчайший
more or less	более или менее
much	много

namely	а именно; то есть
needless to say	нечего и говорить
neither	ни один из
neither ... nor	ни ... ни
nevertheless	тем не менее
no longer	больше не; уже не
no matter (how)	безразлично; независимо от
none the less	нисколько не меньше
no sooner ... than	едва; как только
notably	исключительно; особенно; весьма
not only ... but also	не только ... но также
not so ... as	не такой ... как
notwithstanding	невзирая на
nought	нуль (главным образом в математике)
no wonder	неудивительно
numerous	многочисленный
of course	конечно
of principle	принципиальный
off the point	не по существу
of value	ценный
on account	из-за; вследствие
on a par	в среднем; наравне
on behalf of	от имени; во имя
once	как только; после того, как; однажды
once and again	неоднократно
once and for all	раз и навсегда
once more	еще раз
one and the same thing	одно и то же
only	только
only just	только что
only that	за исключением того, что

on no account	ни в коем случае
on record	зарегистрированный
on the basis of	на основании; на основе
on the contrary	наоборот; напротив
on the one hand	с одной стороны
on the other hand	с другой стороны
on the part of	со стороны
on the strength of	на основании
on the understanding that	на том условии, что
on the whole	в целом
on this evidence	в свете этого
or so	кроме; помимо; приблизительно
other than	кроме; помимо
otherwise	иначе
out of date	устаревший
out of place	не на месте
over	над; через; по
over a period	на протяжении
owing to	из-за; вследствие; благодаря
partially	частично
particular	особый
partly	частично
pay attention	обращать внимание
pending	вплоть до; в ожидании; в течение
per annum	в год; ежегодно
per day	в день
per mensem	в месяц
per mille	на тысячу
p. p./ per pro./ per prop.	по поручению

per se	по существу
pertaining to	относящийся к ...
per unit	на единицу
p. m. (post meridiem)	(во столько-то часов) пополудни
point of interest	интересующий вопрос
presently	теперь; сейчас; вскоре
prior to	до
provide	обеспечивать; предусматривать
providing	при условии, если
provide for	обеспечивать
pursuant to	соответственно; согласно чему-либо
put into operation	ввести в действие
put into use	
quite a few	много
quite a number	много; целый ряд
rather	скорее; довольно
rather than	а не; скорее чем
recalling	напоминая; вспоминая
recognizing	признавая
recognizing and appreciating	признавая и высоко ценя
regarding	относительно
regardless	независимо
relative to	относительно; что касается
resolve further	решать далее
result from	получаться в результате
result in	иметь результатом; приводить к; выражаться в
roughly	приблизительно; в общих чертах
rule of a thumb	эмпирический метод; приблизительный
same	тот же самый; одинаковый; такой же
say	скажем
scarcely	едва; вряд ли

secondly	во-вторых
similar to	подобный
since	с; с тех пор, как; так как; поскольку
since then	с тех пор
so	так; так, что; такой; таким образом; около этого
so as	так, чтобы
so far	до сих пор; до тех пор, пока
so far as possible	по мере возможности
so long as	поскольку; пока
some time or other	когда-нибудь
somewhat	в некоторой степени
sooner or later	рано или поздно
so that	так, чтобы; при этом
so to say	так сказать
step by step	постепенно
subject to	при условии; если
such	такой (же)
such ... as	такой ... как
such as	как например
such is the case	так обстоит дело
such that	такой (такие), что
take account of	учитывать; принимать в расчет
take advantage of	воспользоваться; использовать
take all steps	принять все меры
take care of	заботиться
take into account	учитывать; принимать во внимание
take part	принимать участие
take place	происходить; иметь дело
take precedence of	превосходить; предшествовать; преобладать
take steps	принимать меры
thanks to	благодаря, вследствие
that is	то есть
that is to say	иными словами

that is why	вот почему
the former	первый (из двух названных)
the latter	последний (из двух названных)
then	тогда; затем
the number of	количество; число
the only	единственный
thereby	посредством чего
thereof	об этом; о том; тем самым; из этого; из того
the same	тот же самый
these	эти; они; замена существительного
the ... the	чем ... тем
the two	оба; как тот, так и другой
the very	тот самый; как раз тот
three times as long as	в три раза длиннее
throughout	по всему, повсеместно
thus	таким образом
thus far	до сих пор
times	(во столько-то) раз
to advantage	с успехом; в пользу
to a great extent	в значительной степени
to be a success	иметь успех
to be in force	быть в силе
to evolve a plan	наметить план
together with	наряду с, вместе с
too	слишком; также
to some extent	до некоторой степени
to the last	до конца
to this effect	для этой цели; в этом смысле
to this end	с этой целью; для этого
turn out	оказываться
twice	дважды
twice as high (as)	в два раза выше (чем)
under	под; при
under consideration	рассматриваемый
under way	в процессе осуществления
unless	если ... не
unlike	в отличие от; непохожий на; не такой, как
unlikely	маловероятно; едва ли
until	пока не; до тех пор, пока
until then	до того времени
up to	вплоть до
vice versa	наоборот
whatever	какой бы ни; любой

whenever	когда бы ни; всякий раз как
whereas	тогда как; в то время как
whereby	тем самым; посредством чего
wherein	в чем
wherever	где бы ни; куда бы ни
whether	ли
whether ... or	или ... или
while	в то время как; пока
with a view to	с целью; с намерением
with every good wish	с лучшими пожеланиями
within	внутри; в пределах
within a factor of ten	в пределах одного порядка
within the limits of the power	в пределах прав
without	без; (так чтобы) не
without question	бесспорно
without reservation	безоговорочно
with reference to	ссылаясь на, относительно; что касается
with regard to	с намерением, относительно; с учетом
with respect to	по отношению к, относительно
with the exception of	за исключением
worth-while	заслуживающий внимания
yet	однако, до сих пор, еще
zero	нуль (главным образом на шкалах)

Symbols and formulas

+	plus, addition, positive	μ	micron
–	minus, subtraction, negative	⊂	belongs to
±	plus or minus	∈	is contained in
×,	multiplication sign	∉	is not contained in
:,÷	sign of division, ratio sign	^{0}	degree
=	sign of equality, equals, (is) equal to	%	per cent
≈	approximately equal, approaches	/	minute, foot
→	approaches, tends to, corresponds to	//	second, inch
>	greater than	A'	*A* prime

<	less than	***A"***	*A* second
≥	equal to or greater than	$\tilde{A}$	*A* tilded
∞	infinity	***A****	*A* star
$\sqrt{a}$	the square root of *a*	B_1	*B* sub one
$\sqrt[3]{a}$	the cube root of *a*	B_2	*B* sub two
$\sqrt[n]{a}$	the ***nih*** root of ***a***	C_b	*C* sub *b*
| |	parallel to	C_b'	*C* sub *b* prime
⊥	perpendicular to, a perpendicular mark	**N,No**	number
$\overline{AB}$	length of line from A to B	$\bar{T}$	T barred
∠	angle	$\bar{a}$	*a* vector, the mean value of *a*
⌊	right angle	***dX***	differential of *X*
□	square	***dY/dX***	the first derivative of *y* with respect to *x*
	round, circle	$\int$	integral of
( )	round brackets, parentheses	$\int_a^b$	integral between the limit *a* and *b*
[ ]	square brackets, brackets	$\int_K^i$	integral from *K* to *i*
{ }	braces	***f (x)***	function of *x*
∅	empty set	***R (x)***	*R* of *x*
ν!	factorial; n= 1.2.3. ... n	***64***	*six to the fourth power*
i=0,1 …… , n (where) *i* runs from zero to *n*		a^b	*a* to the power *b*
[X] absolute value of x, magnitude of real number X, modulus of X ([X] =X; X≥0, [X] = –X; X<0)		$\sqrt{4}=2$	the square root of four is two
C=1, 2, ... (where) C is equal to 1, 2 and so on		$\sqrt[3]{64}=4$	the cube root of sixty-four is four

&	and	**1/2**	one half, a half
.	full stop	**1/3**	one third
:	colon	**4/7**	four sevenths
,	comm a	**$2^1/_3$**	two and a third
;	semicolon	**0.3**	nought point three, zero (nill, null) point three
′	apostrophe	**.2**	point two
——	dash	**2.4**	two point four
–	hyphen	**4:2**	the ratio of four to two
« »	inverted commas	***a:b***	the ratio of *a* to *b*
*	asterisk	**2:3=4:6**	two is to three as four is to six
?	interrogation point	***a:b=c:d***	*a* is to *b* as *c* is to *d*
!	point of exclamation	**X=k/y**	*X* varies inversely as *y*
3+5=8	three plus five equals eight	**X→∞**	*X* approaches infinity

a+b=c *a* plus *b* equals *c*

a–b=c *a* minus *b* is equal to *c*

(a+b)×(a-b)=a²-b² the product of the sum and difference of two quantities is equal to the difference of their squares

10-6=4 ten minus six equals four; ten minus six is equal to four

2+X+$\sqrt{4}$+X²=10 two plus *X* plus the square root of four plus *X* squared is equal to ten

1 × 1 = 1 once one is one

$\frac{a+b}{a-b}=\frac{c+d}{c-d}$ *a* plus *b* over *a* minus *b* is equal to *c* plus *d* over *c* minus *d*

2×2=4 twice two is four

$a^3=log_c d$ *a* cubed is equal to the logarithm of *d* to the base *c*

3×3=9 three times three is nine

$X_{a-b}=K$ *X* sub *a* minus *b* is equal to *K*

10x7= 70 10 multiplied by 7 equals seventy

15:3=5 fifteen divided by three equals five

$f(s)=K_{ab}$ *f* of s is equal to *K* sub *ab*

a b=c *a* multiplied by *b* equals *c*

a:b=c *a* divided by *b* is equal to *c*

$\frac{\partial^2 u}{\partial t^2}=0$ the second partial derivative of *u* with respect to *t* equals zero

2^2 two squared

4^3 four cubed

$\int_m^n [f(s),B(s)]ds$ the integral of *f* of s, and *B* of *s* with respect to *s* from m to *n*

$\frac{d^2y}{ds^2}+[2+b(s)]\times y=0$	the second derivative of y with respect to *s,* plus y times the quantity two plus *b* of s, is equal to zero		
3/4 km	three quarters of a kilometer	$\sum_{k=1}^{n} X_k$	sum; X1+X2i....+Xn
1.65 km	one point sixty-five kilometer	$\prod_{k=1}^{n} X_k$	product; X1*X2 ...Xn
15 Ib	fifteen pounds	$\sum_{k=0}^{r}$	the sum from *k* equals 0 to *k* equals *r*
50 mi/h	fifty miles per hour	$\oplus$	modulo – 2 sum
5 ft/s	5 feet per second	$\lfloor X \rfloor$	largest integer less than or equal to X (the integer part of X)
16 h. p.	16 horse powers	$\lceil X \rceil$	smallest integer greater than or equal to X
74.5 °F	seventy-four point five degrees Fahrenheit	$x \approx y$	*x* is approximately equal to *y*
20 °C	twenty degrees Centigrade	$x << y$	*x* is negligible compared to *y*
…..	a dotted line	$\binom{n}{m}$	number of combinations of *n* objects taken *m* at a time
——	a dash line	$f \Delta g$	*f* is defined to be equal to *y*
- - - -	a broken line	$\|f\|$	norm of function *f*
–.–.–	a dot and dash line	(fg)	inner product of functions *f* and *g*
——	a solid line	$[f(D)]_m^n$	$fmD^m+fm+1D^{m+l}+...+fnD^n$ for $n \geq m$ and 0 for $m>n$ where $f(D)=\sum fkDk$ is a polynomial
——→	in the direction of the arrow	$A \cup B$	union of sets A and B (that is, the set of elements in A or B of both)
M^*	a starred parameter	$\nabla f(x)$	gradient of the function *f(x)*
M	its instarred counterpart	$\boldsymbol{Ac}$	complement of set *A*
Δ	laplacian	$\underset{m}{U}\, Am$	A1U A2U A3U …
Δ	a triangle	$A \cap B$	intersection of sets *A* and *B* (that is, the set of elements commonly contained in sets *A* and *B*)

ΔX	the increment of X	$a \in A$	the element *a* is contained in the set *A*
/m/	m appears between slats	**B⊂A**	*B* is a subset of *A*
< **signal>**	the word signal is angle-enclosed	**a:S**	the set of elements *a* such that statement *S* is satisfied.
1.	followed by a period	**A={a:S}**	*A* is defined as the set of elements *a* for which statement *S* is satisfied
reference ^{5}	5 is a raised numerical	**S1 ⇔ S2**	statement *S1* implies *S2* and *S2* implies *S1*
/tube/	the word tube is cited between single quotation marks	**GCD**	greatest common divisor
//line//	the word line is cited between double quotation marks	***inf f(x)***	infinum; largest number *n* ever exceeding *f (x)* over allowed range of *x*. If the minimum exists, then inf *f (x)* = min *f {x}*
~	a swung dash	**LCM**	lowest common multiple
§	a section	$\lim_{x \to y}$	limit as *x* approaches *y*
italic type	indicated by a single straight underscore	$\lim_{\to y+}$	limit as *x* approaches *y* from above
simulation	indicated by a double underscore	$\lim_{\to y-}$	limit as *x* approaches *y* from below
control	indicated by a wavy underscore	**ln**	natural logarithm

log	logarithm to arbitrary base (logn indicates logarithm to base *n*)	***Rn (m)***	remainder after dividing *m* by *n* (*m* and *n* positive integers)
max *f (x)*	maximum value of *f (x)* over allowed range of *x*	***R*g(D) *f(D)***	remainder after dividing polynomial *f (D)* by *g (D)*
$\max_{x \in k}$	maximum over *x* belongs to *k*	**sup *f (x)***	supremum; smallest number never exceeded by *f* (x) over allowed range of *x*. If the maximum exists, then sup *f* (x)=max *f (x)*
min *f (x)*	minimum value of *f (x)* over allowed range of *x*	$\overset{A}{\cdot}\overset{B}{\cdot}$	the points *A* and *B* are marked with letters

ГРЕЧЕСКИЙ АЛФАВИТ И АНГЛИЙСКАЯ ТРАНСЛИТЕРАЦИЯ РУССКОГО АЛФАВИТА

Greek alphabet, English and Russian transliteration

Α α	alpha	альфа	Ν ν	nu	ню
Β β	beta	бета	Ξ ζ	xi	кси
Ι γ	gamma	гамма	Ο ο	omicron	омикрон
Δ δ	delta	дельта	Π π	pi	пи
Ε ε	epsilon	эпсилон	Ρ ρ	rho	ро
Ζ ξ	zeta	дзета	Σ σ	sigma	сигма
Η η	eta	эта	Τ τ	tau	тау
Θ θ	theta	тэта	Υ υ	upsilon	ипсилон
Ι ι	jota	йота	Φ φ	phi	фи
Κ κ	kappa	каппа	Χ χ	chi	хи
Λ λ	lambda	ламбда	Ψ ψ	psi	пси
Μ μ	mu	мю	Ω ω	omega	омега

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В 2009 году Университет стал победителем многоэтапного конкурса, в результате которого определены 12 ведущих университетов России, которым присвоена категория «Национальный исследовательский университет». Министерством образования и науки Российской Федерации была утверждена Программа развития государственного образовательного учреждения высшего профессионального образования «Санкт-Петербургский государственный университет информационных технологий, механики и оптики» на 2009–2018 годы.

The Department of Foreign Languages

The department of foreign languages was established on 20 September 1931. At that time the first new structural subdivision was singled out and the first head of the department, the associate –professor Falk K.I. (1931-1941) was assigned.

13 teachers worked at the department, namely, 7 teachers of English and 6 teachers of German.

The department of foreign languages was headed by:

1941-1951 senior teacher Mitskevich Z.P.

1953-1973 senior teacher Lisikhina B.L.

1973-1993 senior teacher Dygina M.S.

Professor Markushevskaya L.P. has headed the department since 1993.

At present the department consists of four sections: English, French, Russian and German, 30 teachers working in the staff.

More then 60 manuals were published at the department. The electronic versions of English Grammar, Computer in Use, Studying Optics have been produced. It helps students to improve their knowledge working on computers.
Much attention is given to working out different tests for distance education and special courses.

Лариса Петровна Маркушевская
Тамара КонстантиновнаЧарская
Надежда Владимировна Ермошина
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English for Masters

Учебное пособие

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