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МЕТОДИЧЕСКОЕ ПОСОБИЕ

по развитию навыков устной речи и чтения
на английском языке для аспирантов, магистрантов, соискателей
и научных работников

Topical issues for the development of English oral speech and reading for
post-graduate students, master students, doctoral candidates, and scientific
researchers

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Т.Г. Шелягова, И.И. Илюкевич, С.И. Лягушевич, И.Г. Маликова,
Ю.М. Амелина, Н.Н. Крипец, Н.А. Новик

М 54

Методическое пособие по развитию навыков устной речи и чтения на английском языке для аспирантов, магистрантов, соискателей и научных работников / Т.Г. Шелягова, И.И. Илюкевич, С.И. Лягушевич и др. – Мн.: БГУИР, 2006. – 91 с.

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Методическое пособие предназначено для аспирантов, магистрантов, соискателей и научных работников, готовящихся к сдаче кандидатского минимума по английскому языку.

Работа состоит из пяти тематических разделов: «Наука и общество», «Моя научно-исследовательская работа», «Конференции и симпозиумы», «Международное научное сотрудничество», «Средства массовой информации».

Ознакомительное чтение с последующим выходом в говорение осуществляется на базе оригинальных и учебных текстов. В работе содержатся задания на формирования навыков письменной речи в виде написания докладов, резюме научных статей, заполнения анкет, заявлений, составления Curriculum Vitae, визитных карточек т.д.

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UNIT 1
SCIENCE AND SOCIETY

SECTION I
Language Focus

1. Read the dictionary definitions of “science” and “technology” given below.

Science – 1) the study of the physical world and its manifestations, especially by using systematic observation and experiment. 2) a branch of science of a particular area of study. E.G. *the life sciences*

Technology – 1) the study, development, and application of devices, machines, and techniques for manufacturing and productive processes. E.G. *recent developments in seismographic technology...* 2) a method or methodology that applies technical knowledge or tools. E.G. *a new technology for accelerating incubation...*

2. Now look at the following list. In your groups, decide which you would include under science and which under technology and why.

biology	machinery
chemistry	mathematics
electronics	mechanics
geography	physics
hydraulics	sociology

3. Find the word that does not belong in each horizontal group.

a	arithmetic	algebra	genetics	geometry	trigonometry
b	geography	psychology	economics	sociology	anthropology
c	geology	meteorology	mineralogy	geophysics	statistics
d	mechanics	thermodynamics	astrophysics	law	cosmology
e	physiology	astronomy	botany	zoology	anatomy

4. Match the following definitions to the groups of four words that you identified above.

- The mathematical sciences - investigating the relationships between things that can be measured or quantified in either a real or abstract form.
- The physical sciences - investigating the nature and behavior of matter and energy on a vast range of size and scale.
- The earth sciences - examining the structure and composition of our planet, and the physical processes that have helped to shape it.
- The life sciences - studying of living things: a principal branch of science concerned with plants, animals, and other living organisms.
- The social sciences - exploring human society past and present, and the way human beings behave.

5. Make up English-Russian pairs of the words and word-combinations equivalent in meaning.

1	advance	a	вести научные наблюдения
2	applied science	b	достижение
3	belief	c	методический подход
4	endeavor	d	мнение, убеждение
5	instance	e	накапливать, собирать
6	systematic approach	f	отдельный пример, случай
7	systematic study	g	открывать, обнаруживать
8	to accumulate	h	получать, приобретать
9	to detect	i	попытка, старание, стремление
10	to gain	g	прикладная наука
11	to observe	k	проверять, тестировать
12	to test	l	проверять, подтверждать
13	to verify	m	систематическое изучение

6. Complete the collocates below by matching an adjective from A with a noun from B. Some can combine with more than one noun.

Example: practical application, purpose, gain, use.

A	basic	B	advances	knowledge
	common		analysis	method
	current		application	opinion
	important		approach	organization
	industrial		belief	part
	international		breakthrough	prediction
	objective		Bureau	property
	personal		corporation	research
	physical		Council	revolution
	pure		forum	role
	scientific		idea	science
	systematic		instrument	society
	technological		investigation	theory

7. Underline the correct word A, B, C or D to fill the gaps.

Science and technology

The **1**__ of the terms *science* and *technology* have changed significantly from one generation to another. More **2**__ than differences, however, can be found between the terms.

Both science and technology imply a thinking **3**__, both are concerned with causal relationships in the material world, and both employ an experimental methodology that results in empirical demonstrations that can be verified by **4**__. Science, at least in theory, is less concerned with the practicality of its results and

more concerned with the 5__ of general laws, but in practice science and technology are inextricably involved 6__ each other. The varying interplay of the two can be observed in the historical development of such practitioners as chemists, engineers, 7__, astronomers, carpenters, potters, and many other specialists. Differing educational requirements, social status, 8__, methodology, and types of rewards, as well as institutional objectives and professional goals, contribute 9__ such distinctions as can be made between the activities of scientists and technologists; but throughout history the practitioners of “pure” science have made many 10__ as well as theoretical contributions.

Indeed, the concept that science provides the ideas for technological innovations and that 11__ research is therefore essential for any significant advancement in industrial civilization is essentially a 12__. Most of the greatest changes in industrial civilization cannot be traced to the laboratory. Fundamental tools and processes in the fields of 13__, chemistry, astronomy, metallurgy, and hydraulics were developed before the laws governing their functions were discovered. The steam 14__, for example, was commonplace before the science of thermodynamics elucidated the physical principles underlying its operations.

In recent years a sharp value distinction has grown up between science and technology. Advances in science have frequently had their bitter opponents, but today many people have come to fear technology much more than science. For these people, science may be perceived as a 15__, objective source for understanding the eternal laws of nature, whereas the practical manifestations of technology in the modern world now seem to them to be out of control.

- | | | | | | | | | |
|----|---|--------------|---|--------------|---|--------------|---|--------------|
| 1 | A | meanings | B | methods | C | means | D | measures |
| 2 | A | subdivisions | B | distinctions | C | commodities | D | similarities |
| 3 | A | processing | B | process | C | processor | D | processed |
| 4 | A | review | B | revision | C | repetition | D | repertoire |
| 5 | A | advantage | B | upgrade | C | work out | D | development |
| 6 | A | on | B | with | C | of | D | without |
| 7 | A | physicists | B | physics | C | psychology | D | psychiatry |
| 8 | A | dictionary | B | thesaurus | C | vocabulary | D | glossary |
| 9 | A | at | B | to | C | in | D | on |
| 10 | A | practice | B | practicality | C | practitioner | D | practical |
| 11 | A | clean | B | pure | C | fresh | D | clear |
| 12 | A | myth | B | ballad | C | tale | D | legend |
| 13 | A | mechanic | B | mechanism | C | mechanics | D | mechanical |
| 14 | A | engineer | B | engine | C | engineering | D | engineered |
| 15 | A | serene | B | serenade | C | sequence | D | series |

8. Give all possible derivatives of the following words:

To describe, to develop, to discover, to examine, to exist, to investigate, to know, to predict.

SECTION II

Speaking

1. Agree with the statements of your partner.

Example:

- *Freedom is the oxygen without which science cannot breathe.*

- *I completely agree with you. Political democracy and academic freedom are very important to the development of science.*

- 1 There are a lot of definitions of science, but to my mind science is the search for truth. Am I right?
- 2 It is often said that science is a system of statements based on direct experience, and controlled by experimental verification. Do you think it's true?
- 3 It is generally agreed that most of the fundamental ideas of science are essentially simple, and may, as a rule, be expressed in a language comprehensible to anyone. Do you think so too?
- 4 Science has radically changed the condition of human life on earth. It has expanded our knowledge and our power but not our capacity to use them with wisdom. Do you agree with this?
- 5 Most people think that we do not need science and philosophy to know what we should do to be honest and good. Do you think so too?
- 6 Science has opened our eyes to the vastness of the universe and given us light, truth, and freedom from fear where once was darkness, ignorance, and superstition. That's what most scientists think. Do you support their opinion?

2. Disagree with the statements of your partner.

Example:

- *Science has "explained" nothing; the more we know the more fantastic the world becomes and the profounder the surrounding darkness.*

- *I'm afraid I can't agree with you. The main purpose of science is simplicity and as we understand more things, everything is becoming simpler.*

- 1 In my opinion science is always wrong. It never solves a problem without creating ten more. Do you agree with me?
- 2 I think that science robs men of wisdom and usually converts them into phantom beings loaded up with facts. Do you share my opinion?
- 3 It's common opinion that the man of science is a poor philosopher. Do you think so too?
- 4 Science never causes social change. It can't influence the development of modern civilization. Do you think it's true?
- 5 First man conquers nature, and then he learns that conquered nature has lost its purity and he's very upset by this loss. But it's not science that's to blame, it's scientists. They've misused science. Do you support this point of view?
- 6 There are no such things as applied sciences, only applications of science. Do you agree with this statement?

3. Read the following quotations about science. Do you agree or disagree with anything that is said? Which quotation do you agree with more? Why? Give arguments to support your point of view.

Example:

'A fool... is a man who never tried an experiment in his life.' **Erasmus Darwin.**

- *No, I don't think so. That's a very strong claim. I think it can't be applied to ordinary people, only to scientists.*

1 'Science is built up of facts, as a house is built of stones; but an accumulation of facts is no more a science than a heap of stones is a house.' **Jules Henri Poincaré.**

2 'There is no national science just as there is no national multiplication table; what is national is no longer science.' **Anton Chekhov.**

3 'Science is far from a perfect instrument of knowledge. It's just the best we have.' **Carl Sagan.**

4 'Science has nothing to be ashamed of, even in the ruins of Nagasaki.' **Jacob Bronowski.**

5 'It would be quite extraordinary if a major new development in science was *not* applied in warfare, and there is probably little that we can do to prevent it.'

Malcolm Dando.

6 'Honorable errors do not count as failures in science, but as seeds for progress in the quintessential activity of correction.' **Stephen Jay Gould.**

4. Make up questions to which the following phrases are the answers. The dialogue is between a newspaper correspondent and professor Grekov, an expert in physics.

The correspondent: ___?

Prof. Grekov: Oh, yes. I think you've heard such names of prominent physicists and Nobel Laureates as Nikolay Basov, Ilya Frank, Peter Kapitza, Aleksandr Prokhorov, Andrey Sakharov, Igor Tamm and Zhores Alferov.

The correspondent: ___?

Prof. Grekov: It's quite true. They've made a remarkable contribution to modern physics and electronics.

The correspondent: ___?

Prof. Grekov: And of course I'd like to emphasize the achievements of Zhores Alferov. He shared half of the Nobel Prize with American physicist Herbert Kroemer for their independent yet parallel improvements to semiconductors during the early 1960s.

The correspondent: ___?

Prof. Grekov: Yes, it's quite true. Zhores Alferov tried a new method: having combined different semiconducting materials such as gallium arsenide and aluminum gallium arsenide in layers as thin as a few atoms, he vastly improved transistor performance. These layered semiconductors are called heterostructures.

The correspondent: ___?

Prof. Grekov: Today, the heterostructures are used in satellite communication systems, in the base stations for mobile-telephone networks, and in the fiber-optic technology that speeds Internet data throughout the world. Heterostructure lasers make it possible for CD players to reproduce music and for the bar-code scanners in stores to automatically record sales.

The correspondent: ___?

Prof. Grekov: Future improvements in laser-diode technology may one day replace the conventional light bulb with light-emitting devices based on semiconductor heterostructures.

5. In the interviews which follow, a number of scientists express their opinions on the path of scientific development and the qualities needed in a contemporary research worker. Study the interviews and work on them.

Imagine that you are participating in the interviews. Which of the speakers do you most agree with? Why? Introducing your point of view and interfering into communication say: Allow me to say this, will you? May I make a comment on what you have just said? I want to come in on this if I may? May I take up that point which I find most interesting?

Question 1: How do you explain the fact that in the past few decades science has come to occupy such an important place in the life of the society?

Answers:

Academician A.: We all know that our present age is the age of the scientific and technological revolution. Thanks to its achievements, people have for the first time really come to discover the fundamental laws of nature: they have penetrated the depths of the atom, are investigating the world of distant stars, the laws of heredity and essence of life. The achievements of science have penetrated into all spheres of life.

Academician B.: In the last few decades science has come to occupy such an important place in the life of the society because the results of scientific investigation are very important for the improving of living conditions, transport, communications, etc.

Professor C.: Scientific information is being accumulated and the number of scientific personnel is increasing at the rate which has never before existed. Judge for yourselves: ninety percent of the knowledge which mankind has at its disposal today has been acquired to the last fifty years; between eighty and ninety percent of all scientists who have ever existed on this earth live in our epoch; the quantity of scientific publications and the number of specialist journals doubles practically every ten years.

Professor D.: ... because of the great achievements of the past few decades: the

successes in mathematics, physics, chemistry and biology.

Question 2: Which of the problems now facing mankind do you consider the most important and what, in your opinion, can be done to solve them?

Answers:

Academician E.: Even the simplest list of the most important problems facing mankind today would take up too much space. But the main condition, which is essential for the solution of these problems, is peace throughout the whole world, and the close collaboration of people of different nationalities and religions in the further development of productive forces on our planet.

Professor F.: I suppose discoveries in the field of the all-round exploration of solar energy. They are extraordinarily necessary and that means they cannot fail to appear.

Dr. J.: It would be splendid if we could succeed in bridling the three main “killers” of this century – cancer, heart diseases and AIDS (acquired immunodeficiency syndrome).

Question 3: How does science help industry?

Answers:

Academician K.: The application of scientific knowledge is also the task of the scientist. The attaining of truth is only one of the functions of science: its second function is the creation of all possible kinds of technical devices.

Academician L.: The scientist must concern himself with how the knowledge he has acquired can be applied in the economy. Scientific achievements must, in the shortest time possible, be put into practice. Of course, to combine knowledge with fundamental and applied science is not that simple...

6. Read the following dialogue in pairs and then act it out using modifications.

Interviewer: What do scientists know about multiple incarnations?

Scientist: Nothing, as far as I know. What makes you think we would know anything about it?

Interviewer: Is there any reason to believe that it couldn't be studied scientifically?

Scientist: I don't know. I don't see offhand how such a study could be done, but I've never really thought about it.

Interviewer: Has anyone ever tried?

Scientist: I don't know. There could have been any number of failures that were not reported, but I suppose if someone had studied it successfully we would have heard about it.

Interviewer: How?

Scientist: That's a good question. I wonder what it would take to get the results of such a study published in one of our journals...

(long pause)

Scientist: I don't know. I have no idea. But I personally am not particularly interested in that question, so my opinion is probably not worth much. Have you tried to find scientists who are interested?

Interviewer: We tried, but couldn't find any; actually we did find a few who said they thought the concept was fascinating, but no one was interested in doing scientific research on it.

Scientist: Well, I'm afraid you'll have to add me to that list. Maybe you and your friends should consider taking science courses.

7. Make up a short dialogue to the following situation:

You are talking to professor Borisenko, an expert in nanoelectronics. Under his direction various research programmes have been completed. You want to get some information about the development of nanotechnology and its possible uses.

8. Read the text below to find the answers to the following questions:

- a What do we call science?
- b What do different branches of science investigate?
- c How do scientific discoveries influence our lives?

1. Science is a systematic study of anything that can be examined, tested, and verified. From its early beginnings, science has developed into one of the greatest and most influential fields of human endeavor. Today different branches of science investigate almost everything that can be observed or detected, and science as a whole shapes the way we understand the universe, our planet, ourselves, and other living things. Science develops through objective analysis, instead of through personal belief. Knowledge gained in science accumulates as time goes by, building on work performed earlier. Some of this knowledge—such as our understanding of numbers—stretches back to the time of ancient civilizations, when scientific thought first began. Other scientific knowledge—such as our understanding of quarks (the smallest known building block of matter)—dates back less than 50 years. However, in all fields of science, old or new, researchers use the same systematic approach, known as the scientific method, to add to what is known.

2. During scientific investigations, scientists put together and compare new discoveries and existing knowledge. In most cases, new discoveries extend what is currently accepted, providing further evidence that existing ideas are correct. Scientists utilize existing knowledge in new scientific investigations to predict how things will behave. For example, a scientist who knows the exact dimensions of a lens can predict how the lens will focus a beam of light. Sometimes scientific predictions go much further by describing objects or events that are not yet known. An outstanding instance occurred in 1869, when the Russian chemist Dmitry Mendeleev drew up a periodic table of the elements arranged to illustrate patterns of recurring chemical and physical properties. Mendeleev used this table to predict the existence and describe the properties of several elements unknown in his day, and

when the elements were discovered several years later, his predictions proved to be correct.

3. In science, important advances can also be made when current ideas are shown to be wrong. A classic case of this occurred early in the 20th century, when the German geologist Alfred Wegener suggested that the continents were at one time connected, a theory known as continental drift. At the time, most geologists discounted Wegener's ideas, because the Earth's crust seemed to be fixed. But following the discovery of plate tectonics in the 1960s, in which scientists found that the Earth's crust is actually made of moving plates, continental drift became an important part of geology. Through advances like these, scientific knowledge is constantly added to and refined. As a result, science gives us an ever more detailed insight into the way the world around us works.

4. For a large part of recorded history, science had little bearing on people's everyday lives. Scientific knowledge was gathered for its own sake, and it had few practical applications. However, with the dawn of the Industrial Revolution in the 18th century, this rapidly changed. Today, science has a profound effect on the way we live, largely through technology—the use of scientific knowledge for practical purposes. Some forms of technology have become so well established that it is easy to forget the great scientific achievements that they represent. The first automobile, dating from the 1880s, made use of many advances in physics and engineering, including reliable ways of generating high-voltage sparks, while the first computers emerged in the 1940s from simultaneous advances in electronics and mathematics. Other fields of science also play an important role in the things we use or consume every day. Research in industrial chemistry has created a vast range of plastics and other synthetic materials, which have thousands of uses in the home and in industry. Alongside these achievements, science has also brought about technology that helps save human life. As a result, the majority of people on the planet now live longer and healthier lives than ever before.

5. However, scientific discoveries can also have a negative impact in human affairs. Over the last hundred years, some of the technological advances that make life easier or more enjoyable have proved to have unwanted and often unexpected long-term effects. Industrial and agricultural chemicals pollute the global environment, even in places as remote as Antarctica, and city air is contaminated by toxic gases from vehicle exhausts. The increasing pace of innovation means that products become rapidly obsolete, adding to a rising tide of waste. Most significantly of all, the burning of fossil fuels such as coal, oil, and natural gas releases into the atmosphere carbon dioxide and other substances known as greenhouse gases. These gases have altered the composition of the entire atmosphere, producing global warming and the prospect of major climate change in years to come. Science has also been used to develop technology that raises complex ethical questions. This is particularly true in the fields of biology and medicine. Research involving genetic engineering, cloning, and in vitro fertilization gives scientists the unprecedented power to bring about new life, or to devise new forms of living things. At the other extreme, science can also generate technology that is deliberately designed to harm or

to kill. The fruits of this research include chemical and biological warfare, and also nuclear weapons, by far the most destructive weapons that the world has ever known.

9. Scan passage 2 and speak of the way how scientists utilize the existing knowledge in new scientific investigations. Give examples from the text and your own experience.

10. Skim passage 3. In pairs discuss the situation how important scientific advances can be made by proving some current ideas to be wrong. Give examples.

While discussing use the following words and word combinations:
important advances; current ideas; theory; discovery; scientific knowledge; a detailed insight.

11. Look through passage 4. Using the information of the passage and your own experience develop the idea that science today has a profound effect on the way we live. Give as many examples as possible. Discuss them in small groups or in pairs.

12. Scan passage 5 and say whether you agree with the author that scientific discoveries can also have a negative effect in human affairs. Discuss the examples of the author and add those which are not mentioned.

In your discussion use the following words and word combinations:
a negative impact; to have unwanted and unexpected long-term effects; to pollute the global environment; to contaminate; toxic gases; a rising tide of waste; carbon dioxide; global warming; climate change; ethical questions; genetic engineering; destructive weapons.

13. Now compare the positive sides of the development of science and its negative impacts. Discuss the situation in small groups. Comment on the statement: 'Science can be neither good nor evil.'

14. Learn and set out the dialogue. Make your own dialogue on the same subject.

John: Well, Peter, at the moment you are having your practical training in the Laboratory of Solid State Devices. Is that right?

Peter: Yes, that's it.

John: Just tell me one thing: Are you quite satisfied with the results of your practical training? Was it first class?

Peter: Yes. My impressions are very favourable. That's where they do some of the best work on electronics. There are excellent research facilities and a very interesting research programme to fulfill. Surely it can suit any individual needs.

John: Great. What about the staff?

Peter: In fact, it's staffed at all levels with very competent and enthusiastic people. They try to give you every possible help.

John: That sounds fine. What are the main research fields of the lab personnel?

- Peter: Dozens of promising ideas are under investigation, especially in the field of solid state materials and devices.
- John: Could I ask you to be more specific about the problems studied in the Laboratory of Solid State Devices?
- Peter: All right. The team under professor Borisenko is doing device reliability research. Their research findings are very interesting indeed. A very large group of researchers are engaged in studying several problems in the field of nano- and optoelectronics.
- John: I see. And what are your interests?
- Peter: I am interested in all sorts of problems concerned with miniaturization and microminiaturization of electronic devices. I want to make electronic devices smaller, cheaper and more powerful. I'm interested in microelectronics.
- John: Well, Peter, I think I've got the picture. Thanks a lot for having explained everything so concisely.
- Peter: It's been a pleasure. Bye, John.

15. Use the following situation to start a short talk:

You are visiting an exhibition on robotics. You are going to write an article for you university newspaper. Try to get as much information as possible about the history of robotics.

16. Think of a situation where the following proverbs can be used. Discuss them with your partner. Give their Russian equivalents.

- a Time and tide wait for no man.
- b Where there's a will there's a way.
- c Necessity is the mother of invention.
- d Be slow to promise and quick to perform.

SECTION III

Reading

Starter activity. Read the text "Achievements of World Science". Try to understand it and then do the tasks that follow.

Achievements of World Science

In the 20th century, scientists achieved spectacular advances in the fields of genetics, medicine, social sciences, technology, and physics.

In the field of communications, Italian electrical engineer Guglielmo Marconi sent his first radio signal across the Atlantic Ocean in 1901. American inventor Lee De Forest invented the triode, or vacuum tube, in 1906. The triode eventually became a key component in nearly all early radio, radar, television, and computer systems. In 1920 Scottish engineer John Logie Baird developed the Baird Televisor, a primitive television that provided the first transmission of a recognizable moving image. In the

1920s and 1930s American electronic engineer Vladimir Kosma Zworykin significantly improved the television's picture and reception. In 1935 British physicist Sir Robert Watson-Watt used reflected radio waves to locate aircraft in flight. Radar signals have since been reflected from the Moon, planets, and stars to learn their distance from Earth and to track their movements.

In 1947 American physicists John Bardeen, Walter Brattain, and William Shockley invented the transistor, an electronic device used to control or amplify an electrical current. Transistors are much smaller, far less expensive, require less power to operate, and are considerably more reliable than triodes. Since their first commercial use in hearing aids in 1952, transistors have replaced triodes in virtually all applications.

During the 1950s and early 1960s minicomputers were developed using transistors rather than triodes. Earlier computers, such as the electronic numerical integrator and computer (ENIAC), constructed in 1946 by American physicist John W. Mauchly and American electrical engineer John Presper Eckert, Jr., used as many as 18,000 triodes and filled a large room. But the transistor initiated a trend toward microminiaturization, in which individual electronic circuits can be reduced to microscopic size. This drastically reduced the computer's size, cost, and power requirements and eventually enabled the development of electronic circuits with processing speeds measured in billionths of a second.

Further miniaturization led in 1971 to the first microprocessor—a computer on a chip. When combined with other specialized chips, the microprocessor becomes the central arithmetic and logic unit of a computer smaller in size than a portable typewriter. With their small size and a price less than that of a used car, today's personal computers are many times more powerful than the physically huge, multimillion-dollar computers of the 1950s. Once used only by large businesses, computers are now used by professionals, small retailers, and students to perform a wide variety of everyday tasks, such as keeping data on clients, tracking budgets, and writing school reports. People also use computers to interface with worldwide communications networks, such as the Internet and the World Wide Web, to send and receive e-mail, to shop, or to find information on just about any subject.

During the early 1950s public interest in space exploration developed. The focal event that opened the space age was the International Geophysical Year from July 1957 to December 1958, during which hundreds of scientists around the world coordinated their efforts to measure the Earth's near-space environment. As part of this study, both the United States and the Soviet Union announced that they would launch artificial satellites into orbit for nonmilitary space activities.

When the Soviet Union launched the first Sputnik satellite in 1957, the feat spurred the United States to intensify its own space exploration efforts. In 1958 the National Aeronautics and Space Administration (NASA) was founded for the purpose of developing human spaceflight. Throughout the 1960s NASA experienced its greatest growth. Among its achievements, NASA designed, manufactured, tested, and eventually used the Saturn rocket and the Apollo spacecraft for the first manned landing on the Moon in 1969. In the 1960s and 1970s, NASA also developed the first

robotic space probes to explore the planets Mercury, Venus, and Mars. The success of the Mariner probes paved the way for the unmanned exploration of the outer planets in Earth's solar system.

In the 1970s through 1990s, NASA focused its space exploration efforts on a reusable space shuttle, which was first deployed in 1981. In 1998 the space shuttle, along with its Russian counterpart known as Soyuz, became the workhorses that enabled the construction of the International Space Station.

In 1900 the German physicist Max Planck proposed the then sensational idea that energy is not infinitely divisible but is always given off in set amounts, or quanta. Five years later, German-born American physicist Albert Einstein successfully used quanta to explain the photoelectric effect, which is the release of electrons when metals are bombarded by light. This, together with Einstein's special and general theories of relativity, challenged some of the most fundamental assumptions of the Newtonian era.

Unlike the laws of classical physics, quantum theory deals with events that occur on the smallest of scales. Quantum theory explains how subatomic particles form atoms, and how atoms interact when they combine to form chemical compounds. Quantum theory deals with a world where the attributes of any single particle can never be completely known—an idea known as the uncertainty principle, put forward by the German physicist Werner Heisenberg in 1927. But while there is uncertainty on the subatomic level, quantum physics successfully predicts the overall outcome of subatomic events, a fact that firmly relates it to the macroscopic world—that is, the one in which we live.

In 1934 Italian-born American physicist Enrico Fermi began a series of experiments in which he used neutrons (subatomic particles without an electric charge) to bombard atoms of various elements, including uranium. The neutrons combined with the nuclei of the uranium atoms to produce what he thought were elements heavier than uranium, known as transuranium elements. In 1939 other scientists demonstrated that in these experiments Fermi had not formed heavier elements, but instead had achieved the splitting, or fission, of the uranium atom's nucleus. These early experiments led to the development of fission as both an energy source and a weapon.

These fission studies, coupled with the development of particle accelerators in the 1950s, initiated a long and remarkable journey into the nature of subatomic particles that continues today. Far from being indivisible, scientists now know that atoms are made up of 12 fundamental particles known as quarks and leptons, which combine in different ways to make all the kinds of matter currently known.

Advances in particle physics have been closely linked to progress in cosmology. From the 1920s onward, when the American astronomer Edwin Hubble showed that the universe is expanding, cosmologists have sought to rewind the clock and establish how the universe began. Today, most scientists believe that the universe started with a cosmic explosion some time between 10 and 20 billion years ago. However, the exact sequence of events surrounding its birth, and its ultimate fate, are still matters of ongoing debate.

Comprehension check

1. Decide whether the following statements are true (T) or false (F) in relation to the information in the text. If you think a statement is false, change it to make it true.

- a American inventor Lee De Forest invented an integrated circuit, an extremely small complex of electronic components contained on a thin chip or wafer of semiconducting material such as silicon.
- b John Logie Baird, English engineer and television pioneer invented the first commercially viable apparatus to transmit and receive visual images.
- c Sir Robert Watson-Watt, British physicist, is best known for his major contributions to the development of radar.
- d ENIAC, the first large-scale, general purpose, digital computer was built by American physicist John W. Mauchly and American electrical engineer John Presper Eckert, Jr.
- e The central processing unit that performs the basic operations in a microcomputer was invented in the early 1970s.
- f Since the launching of the first artificial satellite in 1960s, artificial satellites play key roles in the communications industry, in military intelligence, and in the scientific study of both Earth and outer space.
- g Many prominent American scientists, including the physicist Enrico Fermi, were associated with the development of the atomic bomb.

2. The table below summarizes the major scientific advances of the 20th century, but the events are in the wrong order. Match each event with the correct year.

	<i>Year</i>		<i>Event</i>
1	1901	a	Scottish engineer John Logie Baird developed the first video broadcasting system.
2	1906	b	The Soviet Union launched the first Sputnik satellite
3	1920	c	The development of the first microprocessor
4	1934	d	American physicists John Bardeen, Walter Brattain, and William Shockley invented the transistor, an electronic device used to control or amplify an electrical current.
5	1935	e	American inventor Lee De Forest invented the triode, or vacuum tube.
6	1939	f	NASA designed, manufactured, tested, and eventually used the Saturn rocket and the Apollo spacecraft for the first manned landing on the Moon
7	1946	g	Italian electrical engineer Guglielmo Marconi transmitted the first radio signal from Cornwall, England, across the Atlantic Ocean to a receiver near St. John's in Newfoundland.
8	1947	h	Some scientists demonstrated that in his experiments Fermi had

- achieved the splitting, or fission, of the uranium atom's nucleus.
- 9 1957 i American physicist Enrico Fermi began a series of experiments in which he used neutrons to bombard atoms of various elements, including uranium.
- 10 1969 j The electronic numerical integrator and computer (ENIAC) was constructed by American physicist John W. Mauchly and American electrical engineer John Presper Eckert, Jr.
- 11 1971 k British physicist Sir Robert Watson-Watt used radar signals to locate aircraft in flight.

3. Find the passage in the text about:

- a the invention of the first practical radio-signaling system;
- b the first flight to the satellite of the Earth;
- c the originator of the quantum theory;
- d the development that was later used for the creation of one of the most destructive weapons;
- e the progress in the scientific study of the origin and structure of the universe.

4. Answer the following questions about the text.

- a Which developments led to the modern computers?
- b Which countries contributed to the space exploration?
- c What does quantum theory deal with?
- d Which developments made the creation of the atomic bomb possible?
- e What is the scientists' opinion about the origin of our universe?

5. Read the text "Our Vision" and look for the answers to the following questions:

- a What advances in energetics will help the mankind to become energy independent?
- b How will science contribute to the solution of the most important environmental problems?
- c What changes in the world's economy will be caused by science?
- d What advances in medical science will we see in the future?
- e How will scientific discoveries improve our everyday life?

Our Vision

We envision a future where our contributions to the physical, biological, and environmental sciences have transformed the world as we know it. Our discoveries have changed forever how we provide for life's most basic needs – and how we view our own existence within a complex, ever-changing universe.

By 2023, science will have helped us achieve a large measure of energy independence. The energy intensity of our economy decreases, and energy sources are now more plentiful and clean. There is a new, more competitive menu of

renewable energy sources, a safer generation of nuclear power, a hydrogen-based energy storage utilization infrastructure, and an efficient energy distribution network that is greatly enhanced by breakthroughs in nano-designed materials, computation, and other relevant fields of science. Having completed key experiments, the promise of fusion power – clean, almost limitless energy – is closer than ever.

We see a world where science provides enduring solutions to the environmental challenges posed by growing world populations and energy use. New, cost-effective approaches, some based on the use of engineered microbes, enable us to tackle some of our most intractable cleanup problems. On a global scale, we have a clearer picture of the complex process of climate change, and we have solutions in hand made possible through the biological and environmental sciences, and in particular, through genomics¹.

Through 2023, science will sustain critical growth and strength in the world's economy. During this period, entirely new industries will be created, and virtually all industries will benefit through the enormously broad reach of breakthroughs in energy and the physical sciences. Our mastery of catalysis, nano-assembly, self-replicating, and complex systems will not only increase our industrial efficiency, but it will create entirely new opportunities for harnessing the power of our material world.

Science fiction will give way to science fact as medical miracles unfold and a new set of promises arises to fill the void. DOE² will continue to capitalize on its strength at the nexus of the physical and life sciences, delivering the nanoscience, biology, precision engineering, and advanced computation that will 'close the deal' in these developments and secure our valued contributing role in medical science. Restoring sight to the blind with microassembled retinal implants will start the journey, with the next stop, hope for those with spinal cord injuries.

As the future unfolds, not only do people enjoy an improved quality of life, but they are more secure. DOE science will have provided the science behind innovations in monitors, sensors, computational analysis, structures, materials, and countless areas that help to provide early threat detection and protect those that we serve.

In the not-too-distant future, our universe will seem more familiar to us, and the mysterious properties of matter and energy less complex. Our pursuit of answers to some of the most persistent questions of science will have revealed important secrets.

At the end of the day, we envision a future where our discoveries have resulted in improved benefits to mankind, whether it was to light the night, heat a home, transport food, cure an illness, or to see and understand the beginning of time itself.

Notes:

- 1 Genomics– the study of the relationships between gene structure and biological function in organisms.
- 2 DOE– Department of Energy.

SECTION IV

Writing

1. Read the extract from the interview with British physicist Clifford Johnson, one of the world's leading theoreticians in the field of elementary particle physics answering the question why it is important that scientists be open-minded. Then write a composition giving your opinion on the question. Prove your opinion by the examples from modern science and technology.

Being open-minded is what science is all about. The best science operates by letting our observations about nature determine what our theories of the world should be. Theories are tested by making verifiable predictions that can then be demonstrated through experiment.

One of the finest examples of this is Galileo. In the 16th century, following Copernicus, he put forth the idea that planets and other local heavenly bodies actually revolve around the Sun, not the Earth. At the time, Earth was believed to be the center of the universe, for religious reasons. The established religious community ridiculed both Copernicus and Galileo. Galileo used a telescope, which he constructed, and showed that Venus exhibits phases as it goes around the Sun (like the Moon does as it goes around the Earth) and that moons orbit Jupiter. These are both predictions of the idea that heavenly bodies can move around objects other than the Earth, an idea contrary to the prevailing view.

Galileo also demonstrated through experiments that light and heavy objects fall at the same rate. The Aristotelian view was that this rate depended on the weight of the falling object, so there was great resistance to this idea despite the experimental evidence.

The best modern-day scientists still operate in this tradition. New data comes along as we do new experiments. This data is assimilated into current theories. At some point, if overwhelming evidence from an experiment cannot support current theory, scientists abandon the old ideas. This is the exercise of open-mindedness in a controlled and fruitful way. However, accepting an idea on flimsy evidence is also not a good way of practicing science, and this can be just as bad as refusing to have an idea challenged.

2. Write a short essay on the latest developments in the field of science you are doing your research in. Make use of the following phrases:

to be engaged in; to conduct research; to make an experiment; to provide scientific knowledge; to meet human needs; to develop new approach to; a landmark of scientific achievement; research priorities in; to foretell the scientific breakthroughs; to improve the quality of life; to create new, innovative technologies.

UNIT 2 RESEARCH WORK

SECTION I Language focus

1. Make up English-Russian pairs of the words and word-combinations equivalent in meaning.

1	approach	a	научный руководитель
2	branch	b	подход
3	department	c	исследовательская группа
4	doctoral candidate	d	обучаться в аспирантуре
5	research	e	заканчивать
6	research team	f	защищать диссертацию
7	scientific supervisor (advisor)	g	быть прикрепленным к
8	survey	h	получать
9	to be attached to	i	опубликовать
10	to be engaged in	j	заниматься ч-л
11	to be through with	k	заканчивать учебное заведение
12	to collaborate	l	встречать(ся)
13	to conduct	m	участвовать
14	to cope with	n	иметь дело
15	to deal with	o	поддерживать
16	to defend a thesis (dissertation)	p	получать практический опыт
17	to encounter	q	(научное) исследование
18	to encourage	r	сотрудничать
19	to gain practical experience	s	кафедра
20	to graduate from	t	соискатель
21	to involve	u	отрасль
22	to obtain	v	проводить
23	to participate	w	вовлекать
24	to provide with	x	обзор
25	to publish	y	справляться
26	to take post-graduate courses	z	обеспечивать

2. Match the definitions below with the words in the list.

1	hypothesis	a	idea; opinion
2	investigation	b	something to be talked or written about or studied
3	notion	c	investigation undertaken in order to discover new facts, get additional information, etc.
4	object	d	idea, suggestions, put forward as a starting point for reasoning or explanation
5	proof	e	topic, subject of a table or a piece of writing
6	purpose	f	evidence that is sufficient to show that smth. is a fact, etc.
7	reference	g	note, direction, etc. telling where certain information may

			be found
8	research	h	a careful study of something
9	subject	i	that which one means to do, get, be, etc.
10	theme	j	person or thing to which action or feeling or thought is directed
11	thesis	k	statement or theory (to be) put forward and supported by arguments, submitted (as part of the requirements) for a university degree

3. Complete the collocates below by matching a word from A with a word from B. Some can combine with more than one word.

Example: scientific research, supervisor, degree

A	valuable	creative	B	approaches	application
	doctoral	fundamental		cooperation	ability
	obtained	modern		prospects	survey
	wide	professional		data	experience
	practical	intellectual		information	candidate
	close	subject-matter oriented		activity	importance
	innovative	career		research	
	extensive			results	

4. In each of the following sentences substitute the word in italics with a word in the list below which makes the least change to the meaning of the sentence.

The format of the research paper is *designed* to shed as much light as possible on how the research was *conducted*. It is *assumed* that the researcher is an *ethical* person who is impartial and is trying to find *accurate* information. Sometimes researchers conduct studies *to test* hypothesis; in other cases, they want to get more information about particular topics or *problems*. In all cases, however, researchers have a moral *obligation* to be as honest as possible and to present their *findings* as accurately as they can. They also must respect the privacy and dignity of any informants who *participate* in their research projects.

<i>duty</i>	<i>take part</i>	<i>issues</i>	<i>verify</i>	<i>outcomes</i>
<i>supposed</i>	<i>intended</i>	<i>precise</i>	<i>carried out</i>	<i>moral</i>

5. Fill in the gaps with the words taken from the text below.

<i>include</i>	<i>data</i>	<i>allow</i>	<i>appropriate</i>	<i>researcher</i>	<i>analysis</i>
<i>signification</i>	<i>ways</i>	<i>explanation</i>	<i>interpret</i>	<i>charts</i>	

The researcher should always try to find 1__ ways of presenting the 2__ and findings, often these include tables, 3__ and quotations – all of which 4__ readers to see for themselves what the 5__ found. The important thing here is “Show, don’t tell”. The finding section should also 6__ a discussion of the data 7__ and the

researcher's 8__ of the data's 9__ . That is, the researcher must 10__ his or her findings for readers in 11__ they can understand.

6. Underline the correct word A, B, C or D to fill in the gaps.

Higher education is becoming an extremely 1__ element in the organization of modern society. New dimensions of economic and technological competition at the regional and global levels have 2__ to new 3__ on education in the area of research. In order to become a top-level specialist one must 4__ to be a researcher. In fact many people are 5__ about research. They have fantastic ideas and crazy notions about what research is and who 6__ it. When many of us think of research, 7__ of scientists or chemists in labs or of physicists with gigantic particle accelerators, probably pop into our minds. Is that really so? Research is a process that includes thinking up 8__ projects to work on and 9__ ways of finding answers to questions. Research is 10__ work but interesting, creative and sometimes 11__. The results of any research work can be presented in different forms but still there are some general 12__ there which a researcher must know.

- | | | | | |
|----|----------------|-----------------|---------------|----------------|
| 1 | A expressive | B important | C urgent | D vitality |
| 2 | A led | B caused | C pursued | D bring |
| 3 | A objections | B offers | C promises | D demands |
| 4 | A learn | B teach | C instruct | D to study |
| 5 | A confusing | B mixed | C confused | D embarrassing |
| 6 | A attends | B conducts | C accompanies | D carries |
| 7 | A paintings | B imagination | C images | D models |
| 8 | A interesting | B interested | C absorbed | D obsessed |
| 9 | A opening | B inventing | C designing | D discovering |
| 10 | A hard | B heavy | C weighty | D hardly |
| 11 | A disappointed | B disillusioned | C frustrating | D sadly |
| 12 | A exceptions | B codes | C status | D rules |

7. Give all possible derivatives of the following words:

to invent, to publish, to use, to investigate, to compute, to collect, to advise, to supervise, to report, to collaborate, science, significance, to create, to interpret, to observe, to require, to involve, success, to guide, purpose.

SECTION II
Speaking

1. Agree with the statements of your partner.

Example:

- Nick Maximov is a post-graduate student at the radioengineering devices department of the University of Informatics and Radioelectronics.

-You are quite right. He is a post-graduate student.

- 1 You work under Dr.Petrov, don't you?
- 2 You have graduated from the University of Informatics and Radioelectronics, haven't you?
- 3 You take part in the research carried on in your laboratory. Am I right?
- 4 You have published several scientific papers in journals, haven't you?
- 5 You collaborate with your colleagues. Is it true?
- 6 You have obtained valuable information, haven't you?
- 7 You want to explore your particular engineering interests further, don't you?
- 8 Publications are actually indispensable for every post-graduate student. Are you of the same opinion?
- 9 Research is hard work but challenging, interesting and sometimes frustrating. What do you think of this?
- 10 A scientific supervisor should be aware of the range of options available and will be able to advise on what is and is not possible.

2. Disagree with the statements of your partner.

Example:

- *This research student has already passed his candidate examinations, hasn't he?*
 - *I am afraid you are mistaken. He has only passed his exam in philosophy.*
- 1 His friend has finished the experimental part of his dissertation, hasn't he?
 - 2 Your colleagues don't assist you in your research. Am I right?
 - 3 The article doesn't contain any valuable information, does it?
 - 4 He has already taken part in many international scientific conferences, hasn't he?
 - 5 My coworker is rather an experimentator than a theoretician. Do you agree with that?
 - 6 He didn't use any new method in his research. Are you of the same opinion?
 - 7 The supervisor's major purpose is to teach you to write about all the problems and phenomena you are interested in. Do you agree with that?
 - 8 There isn't any standard format for research papers. Is it true?
 - 9 A research report should be written in an informal style. Am I right?

3. Agree or disagree with the following statements.

Example:

- *I know (that) you enjoy making reports at scientific conferences.*
 - *Yes, you are right. Besides, I also like to take part in round-table discussions.*
 - *No, I see you are misinformed. I am quite shy and dislike to speak in public.*
- 1 I know that your university trains post-graduate students.
 - 2 I found that almost all collaborators of your department combine activities in research with experimental work.
 - 3 A doctoral thesis is a serious effort and it must mark a considerable advance in a given sphere of knowledge.
 - 4 This branch of knowledge has been rapidly developing in the last two decades.
 - 5 Doctoral candidates are not supposed to pass their examinations in a foreign language.

- 6 You always discuss the obtained data with your scientific supervisor.
- 7 The choice of scientific methods is critical because every methodology has certain strong points and deficiencies.

4. Answer the questions below.

Example:

- I work in close contact with my scientific supervisor. And what about you?

- I work in close contact with my scientific supervisor too.

- 1 Scientific conferences are a good possibility to get new knowledge, to make some scientific and friendly contacts with specialists to exchange views and ideas on this or that point. What do you think of it?
- 2 My friend works in close contact with the scientists of National Academy of Sciences. And what about your friend?
- 3 Our university cooperates very fruitfully with universities of China. And what about your university?
- 4 My scientific supervisor recommends me to take part in various scientific conferences and seminars. And what about your supervisor?
- 5 Conferences play an important role in making young researchers real scholars. What's your idea of this?
- 6 I am especially interested in applied issues. And you?
- 7 I have received a lot of useful information to cultivate my theme. And what about you?
- 8 Different types of study demand a high level of intellectual ability in order to cope with the pressures of having to understand what are likely to be complex arguments, facts or theories. What do you think of it?
- 9 I was given the opportunity to carry out an extensive literature search to look for the gaps in the field I was working. And you?
- 10 I particularly like the flexibility to do what I want and also to work with state-of-the-art technology. And what about you?

5. Paired practice. Read the following statements aloud. Let your partner respond by expressing thanks. Change the roles as you go. Use the patterns below.

Thank you very much; many thanks; thanks a lot; thank you ever so much; thank you for the pleasure; that's very kind of you; I'm very grateful to you, etc.

- 1 It's fundamental and challenging research. You can take part in it.
- 2 We shall publish your research paper in the next issue of our journal.
- 3 Your report has made a great impression on the head of our department. He wants to offer you a position of a senior research associate in one of our labs.
- 4 You may consult me on your research next Monday.
- 5 Your work is of great theoretical and practical significance. We shall give you additional funds to speed it up.
- 6 You have asked for an interview with the President of the National Academy of Sciences. The president will receive you next Monday.

7 Your English is fluent enough to contribute to effective work.

6. Make up questions to which the following phrases are the answers. The dialogue is between a research student and his scientific supervisor.

Scientific supervisor: ___ ?

Research student: Yes, I did. I tried hard to find the necessary information in various journals, but I could find nothing.

Scientific supervisor: ___ ?

Research student: Yes, of course. I also looked through English literature. But my knowledge of English still leaves much to be desired!

Scientific supervisor: ___ ?

Research student: Of course I will. I am going to improve my English by attending the English language courses at our university.

7. Read the following dialogues in parts and then act them out using modifications.

Dialogue 1

Peter: Hello, Mike!

Mike: Oh, Peter! Haven't seen you for ages! What are you doing here in Minsk? I know you live in Vitebsk.

Peter: You are quite right. But this year I have become a post-graduate student of the University of Informatics and Radioelectronics. Do you remember that I was interested in research work when a student?

Mike: Oh, yes, I do. And, of course, you want to carry on research in radioengineering. Am I right?

Peter: Absolutely right you are. I have a particular interest in this field of knowledge.

Mike: That's fine! I congratulate you on a good beginning. They say: "Well begun is half done". I wish you much success in your research.

Peter: Thanks a lot.

Dialogue 2

Post-graduate: What is your opinion of my last article?

Professor: There is a great deal in it that is new, and a great deal that is true....

Post-graduate: Do you really mean ... ?

Professor: ... but it, unfortunately, happens that those portions which are new are not true, and those which are true are not new.

Dialogue 3

Post-graduate: I hear you said my new article was the worst I ever wrote.

Professor: No, I didn't. I said it was the worst article anybody ever wrote.

8. Make up a short dialogue to the following situation.

The scientific supervisor and his post-graduate are discussing the new idea that the young researcher has put forward. The post-graduate is very talented and the prominent scientist is eager to support and encourage him.

9. Read the text below to find the answers to the following questions.

- a** Do specialists with higher scientific degrees have good career prospects?
- b** What does your scientific research deal with?
- c** What are you engaged in at present?

Taking a Post-Graduate Course

1. Specialists with a diploma of higher education may enter the post-graduate course and receive a higher scientific degree. In our country to become a specialist with higher scientific degree a person should take candidate exams in philosophy, a foreign language and specialty and defend his dissertation. Specialists with higher scientific degrees have good career prospects. These prospects are connected with professional, research and creative activities. These people can realize their research potential to full extent.

2. This year I took post-graduate courses to increase my knowledge in radioengineering. I passed my entrance examinations well and now I am a first-year post-graduate student of the Belarusian State University of Informatics and Radioelectronics. I am attached to the radioengineering devices department. In the course of my post-graduate studies I am to pass candidate examinations in philosophy, English and the special subject. So I am going to attend courses of English and philosophy. I am sure the knowledge of English will help me in my scientific research.

3. My scientific research deals with radioengineering. The theme of my thesis is "Radioengineering devices for...". I was interested in the problem when a student so by now I have collected some valuable data for my thesis.

4. I work in close contact with my scientific supervisor. He graduated from Moscow State University 15 years ago and was awarded Doctor's degree at the age of 35. The range of his scientific interests is very wide. He is interested in designing, developing and testing radioelectronic devices and systems, mostly electronic circuits. My scientific supervisor has published a great number of scientific papers. He has taken part in different scientific conferences and seminars both in our country and abroad. He is in good relationships with many well-known scientists in different countries. Nowadays my scientific supervisor combines both theoretical and practical research. Some years ago he worked in Europe, in the universities there, but at the present moment he lectures at our university. As a scientific supervisor he provides me with necessary literature, helps me to organize the empirical research and encourages me to examine the subject of study from a new fresh approach. We often meet at our department and once a month I usually make a report on my study, we discuss some problems, he informs me about the conferences and seminars that are to

take place and advises me to take part in them. I think that our collaboration is fruitful and will always be so.

5. At present I am engaged in making an experiment. I hope it will be a success and I shall be through with my work on time.

10. Go back to passage 1 and name the candidate exams a person should take to enter the post-graduate course.

11. Scan passage 3 and say what the theme of your dissertation is.

12. Look through passage 4 and speak about your scientific supervisor according to the following plan.

- 1 Doctor's degree.
- 2 Scientific publications.
- 3 Participation in the work of scientific conferences.
- 4 The way your scientific supervisor helps you with your research.

13. Exchange your ideas with your colleagues on your future career prospects and the way of their realization. Use the following word combinations in your discussion:

post-graduate courses, a period of research, an intended area of study, an appropriate qualification, to prepare for more advanced study, expected results, something new to be found and achieved, to realize smb's research potential to full extent, to demand a high level of intellectual ability, to require a high degree of organizational ability.

14. Read the text below to find the answers to the following questions:

- a Is your work of practical or theoretical importance?
- b How long have you been working at the problem?
- c What does your research involve?
- d How many scientific papers have you published?

My Research Work

1. I am an engineer of the nano- and microelectronics department of the Belarusian State University of Informatics and Radioelectronics. My special subject is the technology of radio, nano- and microelectronic devices. I combine practical work with scientific research. So I am a doctoral candidate.

2. I am doing research in hybrid circuit technology which is now widely accepted for all types of electronic products. This branch of knowledge has been rapidly developing in the last two decades. The obtained results have already found wide application in most varied spheres of the country's national economy.

3. I am particularly interested in that part of hybrid circuit technology which includes the production of passive elements of circuits by electrochemical oxidation of metals. I have been working at the problem for two years. I got interested in it when a student. My work is primarily of practical importance. It is based on the

theory developed by the collaborators of our department. So I can say that I work in close cooperation with my colleagues. We also closely collaborate with several enterprises of our republic and other countries. There are several research teams at our department. The team I work in is headed by Doctor of technical sciences professor S.V.Petrov. He is my scientific supervisor. I always consult him when I encounter difficulties in my research. We often discuss the obtained data.

4. I am rather an experimentator than a theoretician. My research involves mathematical and statistical analysis, simulations and practical measurements using expensive equipment which is only available in very few universities. The methods used in my work are: anodizing in a galvanostatic regime, oxidation in a cathode regime and some others. The obtained data enabled me to define more precisely the theoretical model of anodic oxide films growth.

5. I have not yet completed the experimental part of my thesis, but I am through with the theoretical part. I have published 10 scientific papers so far, some of which were written when I was a student. Two of them were published in the journals of Japan and Austria. I take part in various scientific conferences where I make reports on my subject. I willingly participate in scientific discussions and debates.

6. I am planning to finish writing the thesis by the end of the next year and defend it in the scientific council of the University of Informatics and Radioelectronics. I hope to get the scientific degree of a candidate of technical sciences.

15. Go back to passage 1 and name the special subject of your research.

16. Scan passage 2 and explain why you have chosen this particular branch of study.

17. Look through passage 3 and say who you collaborate with.

18. Scan passages 4,5 and discuss with the partner the experimental part of your research and the results obtained. Use the following word combinations in your discussion:

to use various tools; methods such as ;to enable smb. to do smth.; the theoretical model of; to be through with smth.; to participate in scientific discussions.

19. Learn and set out the dialogue. Make up your own dialogue on the same subject.

No pains, no gains (Без труда нет плода)

A: Next Monday there'll be an extra department meeting. Peter Smirnov has finished his doctoral thesis and we shall discuss it.

B: I like him. He is a talented scientist. He has been working for his doctorate for 5 years with complete absorption and showed remarkable ability as a researcher.

C: He deserves a high academic degree

20. Use the following situations to start a short talk.

a Your scientific supervisor has looked through your paper for the Electronics Conference. Its subject is "Optical Behaviour of Electronic Devices". He is

making some critical remarks now.

- b You are upset about your research findings. You can't get any positive result. Your friend tries to cheer you up.

21. Think of the situations where the following proverbs can be used.

Discuss them with your partner.

- 1 "Well begun is half done" – Лиха беда – начало.
- 2 "A big ship sails in deep waters" – Большому кораблю – большое плавание.

SECTION III

Reading

1. Starter activity.

Before you read the text below say what you know about postgraduate courses in the U.K.? What is the difference between the courses by instruction and research courses? What qualities are required by these two different types of postgraduate study? What additional qualities does a research course demand? Do you think it's easy to choose a course of study?

Post-Graduate Course: Matter, Content, Requirements

Matter of Course

A quick look through the postgraduate prospectus of any UK university will reveal that there are two distinct types of study possible, the first by instruction and the second by research. Universities do not always offer both types of study in the same subject area, so you may need to hunt around for the course, which you think, will be best for you.

Courses by Instruction

The most common type of course in terms of the numbers of people undertaking them are courses by instruction, or taught courses as they are sometimes called.

Taught courses normally take one year and usually lead to a higher degree such as a Master of Science (MSc) or a Master of Arts (MA). Applicants should usually hold a degree in the same subject as the intended area of study, but there are some important exceptions to this rule, particularly in subjects such as information technology and business administration. Where an appropriate qualification is not held, it is sometimes possible to undertake a preliminary course, such as a certificate or a diploma, in order to prepare for the more advanced study to follow.

Degrees by instruction are very similar to undergraduate courses in that most of the time is devoted to attending lectures. This may take up the first eight or nine months of the course and is followed by written examinations. A period of research lasting for two or three months usually follows and the results of it are presented in the form of the thesis. Finally, an oral examination is held, lasting perhaps an hour or

two, to test the knowledge accumulated throughout the year. It is important to perform satisfactorily in every part of this assessment procedure.

Research Courses

As with taught courses, it is usually necessary to hold a degree in the same subject as that for which the research is planned. The nature of this type of study is completely different, however, from that taken through a taught course. First of all it lasts for longer. The most popular qualification is a Doctor of Philosophy (PhD), which usually takes three years. There is the shorter version called a Master of Philosophy (MPhil), but minimum amount of time, which this takes, is usually two years. Both of these qualifications require the student to carry out a piece of innovative research in a particular area of study. It is essential that the work has never been done before. The person who supervises a research degree will be aware of the range of options available and will be able to advise on what is and is not possible.

The start of a research degree involves a very extensive survey of all previous work undertaken in that area. At the same time, if the student is planning to carry out any practical experimentation, the necessary equipment will need to be obtained.

The preliminary part of the study can take up to six months, but it is important to note that the process of keeping up to date with other work going on in the subject must continue throughout the entire period of the research.

The next stage of a research course usually involves collecting information in some way. This might be through experimentation, in the case of arts, social sciences or humanities degree. The important thing is that something new must be found.

This second part of the procedure takes about two years in the case of a PhD. The research is written up in the form of a thesis during the final six months of the three-year period. Typically, this will contain an introduction, methodology, results and discussion. As in the case with taught degrees, the research must then be examined orally. Occasionally, if the examiners are not completely happy with the work they may ask the candidate to rewrite parts of the thesis. Hopefully, a good supervisor will make sure this does not happen!

Qualities Needed

Broadly speaking, these two different types of study require similar qualities from the people who undertake them. Both demand an inquisitive mind that will maintain the kind of motivation required to keep wanting to learn and discover new information.

They also both demand a high level of intellectual ability in order to cope with the pressures of having to understand what are likely to be complex arguments, facts or theories. Both require a high degree of organizational ability and time management, as so many different things need to be attended to.

However, a period of study by research demands additional qualities. For example, it is not at all uncommon for research to work out entirely different from what was hoped or planned. Expected results may not materialize, experiments may not work, and so on. At times such as these it is essential to stay calm and to keep on trying. In other words, you need to be very patient. Because research requires

something new to be found or achieved, it is also important to enjoy solving problems and to have a lot of confidence in your own creative ability.

Choosing a Course

If you are in the position of trying to decide whether to do further study by a taught course or by research, it is important to consider how you would answer the following questions.

First, what do you want to achieve through the study? The answer to this question will include a consideration of the likely employment prospects, which will follow your study. If your future work will demand specific knowledge, then a taught course might provide you with this. On the other hand, if you intend to follow a research career, then a research qualification might be more suitable.

The second question involves asking yourself whether you have the right qualities for the type of study you would like to do. You will need to give serious thought to whether you really do have the extra qualities which research demands over and above those required by a taught course.

2. Read the text “Academic Degrees” and look for the answers to the following questions:

- a** What is an academic degree?
- b** What was the first recorded academic degree?
- c** What are four principal types of academic degrees conferred by American institutions?
- d** What is the best-known academic degree?
- e** What are the most frequently awarded master’s degrees?
- f** Who is a doctor in an academic sense?
- g** What does the Doctor of Philosophy (Ph.D.) degree represent?

Academic Degrees

An academic degree is a title awarded by a college or university for successfully completing a course of study or for a particular attainment. Earned degrees are bestowed for completion of courses of study; honorary degrees recognize a certain attainment, not necessarily connected with an educational institution.

Development of degrees

Academic degrees have been in use for about 800 years; the first one recorded was the Doctor of Civil Law conferred by the University of Bologna (Italy) in the middle of the 12th century. This was followed by the Doctor of Canon Law and Doctor of Divinity and, in the 13th century, by doctorates in medicine, grammar, logic and philosophy. The use of degrees spread from Bologna to other European universities. Originally the doctor’s (from Latin doctor, “teacher”; from docere, “to teach”) and master’s degrees were used interchangeably, each indicating that the holders were qualified to teach, and the titles of Master, Doctor and Professor were synonymous. On the other hand, the bachelor’s or baccalaureate degree (from Latin baccalaureus, a bachelor of arts) was used to indicate the entrance upon a course of

study preparatory to the doctorate or mastership, and not achievement. Gradually, however, it came to mean successful completion of one level of study preparatory to a higher degree.

The use of academic degrees spread to British universities from the Continent and was extensively developed, especially at Oxford and Cambridge universities. The doctorate in music was conferred by these universities in the 15th century. Today there are an increasing variety of degrees in British universities, as in U.S institutions.

Types of degrees

Four principal types of academic degrees – associate, bachelor, master and doctor, representing different levels of academic achievement, are conferred by American institutions of higher education; a few institutions confer additional types of degrees, representing other levels of achievement.

Bachelor's degree

The bachelor's degree, usually representing completion of a four-year course of study on a collegiate level, is the oldest and the best-known academic degree, particularly under the designation of Bachelor of Arts. Some varieties of bachelor's, or baccalaureate, degree is currently offered by about 750 institutions, most of which offer a Bachelor of Science in Education. Other baccalaureate degrees offered by a large number of institutions are Bachelor of Education, Bachelor of Music, Bachelor of Business Administration, Bachelor of Divinity, and Bachelor of Home Economics. Most institutions offer more than one variety of Baccalaureates, but about one tenth report use of the Bachelor of Arts only, regardless of the particular curriculum completed.

Master's degree

The earned master's degree in general represents one year of work beyond the baccalaureate, but in a few institutions or in a few fields it requires two years of graduate work. The most frequently awarded master's degrees are Master of Arts, Master of Science, Master of Education, Master of Business Administration, Master of Music and Master of Fine Arts. The Master of Philosophy degree is conferred to those who have completed all requirements for the Doctor of Philosophy degree except the doctoral dissertation.

Doctor's degree

The Doctor's Degree represents the most advanced earned degree conferred by U.S. institutions, or indeed by those of any country. In the academic sense, a doctor is an individual in any faculty or branch of learning who has attained to the highest degree conferred by a university. Doctor's degrees in the United States are of two distinct types – professional or practitioner's degrees, and research degrees.

The former represent advanced training for the practice of various professions, chiefly in medicine and law. The principal ones are Doctor of Medicine, Doctor of Dental Science, Doctor of Veterinary Medicine, Doctor of Pharmacy and Doctor of Jurisprudence. These degrees carry on implication of advanced research.

Quite different in character are the research doctorates representing prolonged periods of advanced study, usually at least three years beyond the baccalaureate, accompanied by a dissertation designed to be a substantial contribution to the

advancement of knowledge. The most important of these is the Doctor of Philosophy (Ph.D.), which no longer implies knowledge of philosophy, but which represents advanced research in any major field of knowledge. It was first awarded by Yale University in 1861, young men desiring the most advanced training in scholarship attended the principal German and occasionally other European universities to secure their Ph.D's.

Second in importance and much more recent as a research degree is the Doctor of Education (Ed.D.). It was first awarded by Harvard in 1920, but was preceded by the equivalent Doctor of Pedagogy first conferred by New York University in 1891. The only other earned doctorates of the research type currently conferred by 10 or more institutions are the Doctor of the Science of Law and the Doctor of Business Administration.

Degrees in Foreign Countries

Considerable diversity exists in the systems of higher education which have developed in various countries and in the degrees employed to mark completion of various stages of education. Numerous international groups have been working, with only partial success, on the problem of determining equivalence of degrees in various countries. Some similarities can be found among certain groups of countries, particularly those of the British Commonwealth, continental Europe, Latin America and the Far East.

3. Read the text “How Scientists Work”. Try to understand it and then do the tasks that follow.

How Scientists Work

Scientific research can be divided into basic science, also known as pure science, and applied science. In basic science, scientists working primarily at academic institutions pursue research simply to satisfy the thirst for knowledge. In applied science, scientists at industrial corporations conduct research to achieve some kind of practical or profitable gain.

In practice, the division between basic and applied science is not always clear-cut. This is because discoveries that initially seem to have no practical use often develop one as time goes by. For example, superconductivity, the ability to conduct electricity with no resistance, was little more than a laboratory curiosity when Dutch physicist Heike Kamerlingh Onnes discovered it in 1911. Today superconducting electromagnets are used in an ever-increasing number of important applications, from diagnostic medical equipment to powerful particle accelerators.

Scientists study the origin of the solar system by analyzing meteorites and collecting data from satellites and space probes. They search for the secrets of life processes by observing the activity of individual molecules in living cells. They observe the patterns of human relationships in the customs of aboriginal tribes. In each of these varied investigations the questions asked and the means employed to find answers are different. All the inquiries, however, share a common approach to

problem solving known as the scientific method. Scientists may work alone or they may collaborate with other scientists. In all cases, a scientist's work must measure up to the standards of the scientific community. Scientists submit their findings to science forums, such as science journals and conferences, in order to subject the findings to the scrutiny of their peers.

Scientific Method

Whatever the aim of their work, scientists use the same underlying steps to organize their research: (1) they make detailed observations about objects or processes, either as they occur in nature or as they take place during experiments; (2) they collect and analyze the information observed; and (3) they formulate a hypothesis that explains the behaviour of the phenomena observed.

Observation and Experimentation

A scientist begins an investigation by observing an object or an activity. Observation typically involves one or more of the human senses—hearing, sight, smell, taste, and touch. Scientists typically use tools to aid in their observations. For example, a microscope helps view objects too small to be seen with the unaided human eye, while a telescope views objects too far away to be seen by the unaided eye.

Scientists typically apply their observation skills to an experiment. An experiment is any kind of trial that enables scientists to control and change at will the conditions under which events occur. It can be something extremely simple, such as heating a solid to see when it melts, or something highly complex, such as bouncing a radio signal off the surface of a distant planet. Scientists typically repeat experiments, sometimes many times, in order to be sure that the results were not affected by unforeseen factors.

Most experiments involve real objects in the physical world, such as electric circuits, chemical compounds, or living organisms. However, with the rapid progress in electronics, computer simulations can now carry out some experiments instead. If they are carefully constructed, these simulations or models can accurately predict how real objects will behave.

One advantage of a simulation is that it allows experiments to be conducted without any risks. Another is that it can alter the apparent passage of time, speeding up or slowing down natural processes. This enables scientists to investigate things that happen very gradually, such as evolution in simple organisms, or ones that happen almost instantaneously, such as collisions or explosions.

Data Collection and Analysis

During an experiment, scientists typically make measurements and collect results as they work. This information, known as data, can take many forms. Data may be a set of numbers, such as daily measurements of the temperature in a particular location or a description of side effects in an animal that has been given an experimental drug. Scientists typically use computers to arrange data in ways that make the information easier to understand and analyze. Data may be arranged into a diagram such as a graph that shows how one quantity (body temperature, for

instance) varies in relation to another quantity (days since starting a drug treatment). A scientist flying in a helicopter may collect information about the location of a migrating herd of elephants in Africa during different seasons of a year. The data collected may be in the form of geographic coordinates that can be plotted on a map to provide the position of the elephant herd at any given time during a year.

Scientists use mathematics to analyze the data and help them interpret their results. The types of mathematics used include statistics, which is the analysis of numerical data, and probability, which calculates the likelihood that any particular event will occur.

Formulating a Hypothesis

Once an experiment has been carried out and data collected and analyzed, scientists look for whatever pattern their results produce and try to formulate a hypothesis that explains all the facts observed in an experiment. In developing a hypothesis, scientists employ methods of induction to generalize from the experiment's results to predict future outcomes, and deduction to infer new facts from experimental results.

Formulating a hypothesis may be difficult for scientists because there may not be enough information provided by a single experiment, or the experiment's conclusion may not fit old theories. Sometimes scientists do not have any prior idea of a hypothesis before they start their investigations, but often scientists start out with a working hypothesis that will be proved or disproved by the results of the experiment. Scientific hypotheses can be useful, just as hunches and intuition can be useful in everyday life. But they can also be problematic because they tempt scientists, either deliberately or unconsciously, to favor data that support their ideas. Scientists generally take great care to avoid bias, but it remains an ever-present threat. Throughout the history of science, numerous researchers have fallen into this trap, either in the hope of self-advancement or because they firmly believe their ideas to be true.

If a hypothesis is borne out by repeated experiments, it becomes a theory—an explanation that seems to consistently fit with the facts. The ability to predict new facts or events is a key test of a scientific theory. In the 17th century German astronomer Johannes Kepler proposed three theories concerning the motions of planets. Kepler's theories of planetary orbits were confirmed when they were used to predict the future paths of the planets. On the other hand, when theories fail to provide suitable predictions, these failures may suggest new experiments and new explanations that may lead to new discoveries. For instance, in 1928 British microbiologist Frederick Griffith discovered that the genes of dead virulent bacteria could transform harmless bacteria into virulent ones. The prevailing theory at the time was that genes were made of proteins. But studies performed by Canadian-born American bacteriologist Oswald Avery and colleagues in the 1930s repeatedly showed that the transforming gene was active even in bacteria from which protein was removed. The failure to prove that genes were composed of proteins spurred Avery to construct different experiments and by 1944 Avery and his colleagues had found that genes were composed of deoxyribonucleic acid (DNA), not proteins.

Communicating with Other Scientists

If other scientists do not have access to scientific results, the research may as well not have been performed at all. Scientists need to share the results and conclusions of their work so that other scientists can debate the implications of the work and use it to spur new research. Scientists communicate their results with other scientists by publishing them in science journals and by networking with other scientists to discuss findings and debate issues.

Science Publications

In science, publication follows a formal procedure that has set rules of its own. Scientists describe research in a scientific paper, which explains the methods used, the data collected, and the conclusions that can be drawn. In theory, the paper should be detailed enough to enable any other scientist to repeat the research so that the findings can be independently checked.

Scientific papers usually begin with a brief summary, or abstract, that describes the findings that follow. Abstracts enable scientists to consult papers quickly, without having to read them in full. At the end of most papers is a list of citations—bibliographic references that acknowledge earlier work that has been drawn on in the course of the research. Citations enable readers to work backwards through a chain of research advancements to verify that each step is soundly based.

Scientists typically submit their papers to the editorial board of a journal specializing in a particular field of research. Before the paper is accepted for publication, the editorial board sends it out for peer review. During this procedure a panel of experts, or referees, assesses the paper, judging whether or not the research has been carried out in a fully scientific manner. If the referees are satisfied, publication goes ahead. If they have reservations, some of the research may have to be repeated, but if they identify serious flaws, the entire paper may be rejected for publication.

The peer-review process plays a critical role because it ensures high standards of scientific method. However, it can be a contentious area, as it allows subjective views to become involved. Because scientists are human, they cannot avoid developing personal opinions about the value of each other's work. Furthermore, because referees tend to be senior figures, they may be less than welcoming to new or unorthodox ideas.

Once a paper has been accepted and published, it becomes part of the vast and ever-expanding body of scientific knowledge. In the early days of science, new research was always published in printed form, but today scientific information spreads by many different means. Most major journals are now available via the Internet (a network of linked computers), which makes them quickly accessible to scientists all over the world.

When new research is published, it often acts as a springboard for further work. Its impact can then be gauged by seeing how often the published research appears as a cited work. Major scientific breakthroughs are cited thousands of times a year, but at the other extreme, obscure pieces of research may be cited rarely or not at all. However, citation is not always a reliable guide to the value of scientific work.

Sometimes a piece of research will go largely unnoticed, only to be rediscovered in subsequent years. Such was the case for the work on genes done by American geneticist Barbara McClintock during the 1940s. McClintock discovered a new phenomenon in corn cells known as transposable genes, sometimes referred to as jumping genes. McClintock observed that a gene could move from one chromosome to another, where it would break the second chromosome at a particular site, insert itself there, and influence the function of an adjacent gene. Her work was largely ignored until the 1960s when scientists found that transposable genes were a primary means for transferring genetic material in bacteria and more complex organisms. McClintock was awarded the 1983 Nobel Prize in physiology or medicine for her work in transposable genes, more than 35 years after performing the research.

Glossary:

pursue	[pɜː'sjuː]	выполнять	
curiosity	['kjʊrɪ'psɪtɪ]	любопытство	
scrutiny	['skruːtɪni]	критический рассмотрение	разбор;
instantaneously	['ɪnstəntə'neɪtɪslɪ]	мгновенно, немедленно	
infer	['ɪnfɜː]	делать (логический выводить (заключение))	вывод),
hunch	[hʌntʃ]	предчувствие, подозрение	
unconsciously	[ʌn'kɒn'sɪslɪ]	бессознательно	
bias	['baɪəs]	пристрастие, предубеждение	
confirm	[kən'fɜːm]	подтверждать	
spur	[spɜː]	побуждать	
submit	[sʌb'mɪt]	представлять на рассмотрение	
assess	[ə'ses]	оценивать	
flaw	[fləʊ]	упущение, ошибка	
reject	[rɪ'geɪt]	отвергать, отклонять	
contentious	[kən'tenʃəs]	спорный	
obscure	[əb'skjʊə]	неясный, непонятый	

Comprehension check

4. Define the statements as true or false. Underline the phrases in the text that support your answer.

- a In basic science scientists conduct research to achieve some practical gain.
- b Any investigation begins with the observation of an object or an activity.
- c Scientists usually repeat their experiments in order to be sure that the results obtained are objective.
- d Computer simulations can precisely predict the behaviour of the real objects.
- e A hypothesis is always formulated before starting the experiment.
- f The method of induction is used by scientists to infer new facts from experimental results.
- g A hypothesis becomes a theory when it is confirmed by repeated experiments.

- h** Before the publication a scientific paper should be reviewed by the experts.
- i** The peer-review process excludes subjective evaluation of the paper.
- j** To be recognized as a part of scientific knowledge a paper should be accepted and published in a printed form.

5. Complete the following:

- a** They search for the secrets of life processes__.
- b** In all cases, a scientist's work__.
- c** It can be something extremely simple__.
- d** This enables scientists to investigate__.
- e** Data may be a set of numbers__.
- f** Data may be arranged into a diagram__.
- g** Scientists use mathematics__.
- h** Throughout the history of science__.
- i** Citations enable readers to work__.
- j** Because scientists are human__.
- k** Major scientific breakthroughs are cited__.

6. Find the passages in the text about:

- a** a common approach used by researchers of various branches of science for problem solving;
- b** the tools used by scientists in their observations;
- c** the various forms of data presentation;
- d** the reason why hypothesis may be problematic;
- e** the information given in an abstract of a scientific paper;
- f** a procedure of submitting a scientific paper for publication;
- g** the criterion of the value of a scientific work.

7. Answer the following questions about the text:

- a** Why isn't there a clear-cut division between basic and applied science?
- b** What steps do scientists use to organize their research?
- c** What is an experiment?
- d** What are the advantages of a computer simulation?
- e** What does a hypothesis explain?
- f** Why is it difficult sometimes to formulate a hypothesis?
- g** Why should a paper be detailed enough?
- h** What is a key test of a scientific theory?
- i** What may failed theories suggest?
- j** Why do scientists need to share the results and conclusions of their work?

8. Read the text "Supervising" and:

- a** find the place where the author names the most important qualities of a person as a supervisor;
- b** comment on the dictum you like most of all.

Scientific success in general and the defense of a thesis in particular is never an accident; it is always the result of high intention, sincere effort, intelligent direction and skilled execution; it represents the wise choice of many alternatives.

Supervising

A scientific supervisor is a person who can combine at least two qualities of almost equal importance: being a scientist and being a supervisor. But actually there is one more, not less significant quality implied by this phrase: being a pedagog. Only the harmony of these characteristics can succeed in giving excellent results, thus it can be fruitful for both, the scientific supervisor himself and his post-graduate. So, **being a scientist implies the availability of the following characteristics:**

- a original and sustained thinking
“No problem can stand the assault of sustained thinking” (Voltaire)
- b inquiring mind
“The incomparable enjoyment in finding exact answers to all questions”
- c purposefulness and persistence
“Great works are performed not by strength, but perseverance” (Samuel Johnson)
- d perfectionism
“There is always a better way ... your challenge is to find it”.

Being a supervisor implies:

- a excellence
excellence can be attained if you:
 - *care more than others think is wise;*
 - *risk more than others think is safe;*
 - *dream more than others think is practical;*
 - *expect more than others think is possible.*
- b responsibility and self-demand
“Hold yourself responsible for a higher standard than anybody else expects of you. Never excuse yourself” (Henry Ward Beecher)
- c discipline, organization and consistency
- d self-assessment and reflexivity
- e self-confidence and optimism
“Failure is success if we learn from it” (Malcolm Forbs)

Being a pedagog implies:

- a being a personality, bright, free and assertive;
- b being kind, careful, friendly;
- c being indispensable for the pupils;
- d being able to reveal the creative abilities of every pupil.

SECTION IV

Writing

- 1 Make a written summary of the scientific paper you have prepared for the

publication in a scientific journal.

- 2 Write an essay of 230-250 words. Reflect on the role of a scientific supervisor and his/her impact on postgraduate's development, achievements and promotion.
- 3 Study the following curriculum vitae (CV) carefully and fill in the form given:

CURRICULUM VITAE

Updated _____

Name: Last, First, Middle _____

Date and Place of Birth _____

Home Address/ Telephone _____

Position/ Affiliation _____

Office address/ Telephone _____

Educational background (in reverse chronological order)

Dates	University/ Institute	Field of Study	Degree

Employment History (in reverse chronological order)

Dates	Employer	Address	Position

Teaching Experience _____

Other Professional Activities, Membership in Professional Associations

Fields of Interests _____

Academic Degrees and awards, Professional Recognition _____

Grants, Scholarships _____

Participation in Conferences and Seminars _____

Major Publications (in chronological order) _____

Language Proficiency _____

Native Language _____

Foreign Languages. Rate your skills using *Good, Fair, Poor*

Language	Reading	Writing	Listening	Speaking

Signature _____

UNIT 3

SCIENTIFIC INTERNATIONAL COOPERATION

SECTION I

Language focus

1. Make up English-Russian pairs of the words and word-combinations equivalent in meaning.

1	a means	a	средство
2	comprehensive programme	b	в рамках (пределах) чего-либо
3	endeavour	c	вопрос (проблема) обсуждения
4	feature	d	усилие
5	in the frame of	e	основываться
6	incentive to do research	f	обмениваться
7	issue	g	продвигаться вперед
8	mutual	h	стимул к научной работе
9	to advance	i	взаимный
10	to concern	j	общее направление
11	to facilitate	k	касаться
12	to deal with	l	комплексная программа
13	to establish	m	считать (рассматривать)
14	to exchange	n	решать проблему
15	to expand	o	поддерживать
16	to involve	p	расширять
17	to maintain	q	оказывать помощь
18	to pave the way to smth	r	устанавливать
19	to regard	s	черта (особенность)
20	to rest on (upon)	t	вовлекать
21	to solve the problem	u	подготовить почву для чего-либо
22	trend	v	иметь дело с

2. Match the definitions below with the words in the list.

1	to advance	a	to work together for a common purpose
2	to benefit	b	complex, intricate
3	comprehensive	c	to recognize the validity of smth
4	equity	d	wide in scope or in content
5	essential	e	the quality of being fair or impartial, fairness
6	indispensable	f	to further the development, progress or prospects of smth
7	research	g	to get smth that promotes well-being
8	solution	h	to advance in rank or position
9	sophisticated	i	of considerable use or importance

- | | | | |
|----|----------------|---|--|
| 10 | to acknowledge | j | to stimulate by guidance, approval etc |
| 11 | to contribute | k | absolutely necessary; relating to the essence of a thing |
| 12 | to encourage | l | an answer to a problem |
| 13 | to promote | m | careful or patient study of subject in order to discover or revise facts, theories, principles |

3. Complete the collocates below by matching a noun from A with a noun from B. Some can combine with more than one noun.

Example: communication security, university research coordination centre...

A	centre	internet	B	activities	promotion
	communication	knowledge		coordination	reduction
	development	policy		curricula	requirements
	environment	production		implementation	results
	ethics	property		magazine	revolution
	exchange	research		processes	rights
	government	safety		production	security
	information	science		programme	solution
	innovation	university		progress	strategy
	integration			projects	support

4. Underline the correct word A, B, C or D to fill the gaps.

UNESCO – a catalyst for international cooperation

To understand the ends served by international cooperation, let us look at the Organization's main objective. The Constitution states that the purpose of UNESCO is that of "1___, through the educational and scientific and cultural relations of the peoples of the world, the objectives of international peace and of the 2___ welfare of humankind." These words place "3___ of the peoples of the world", that is, international cooperation, at the heart of the matter. This formulation 4___ to put things in perspective: we are interested in science but especially science for peace; we 5___ the 6___ of culture but as a way to generate improved intercultural understanding. And all of our work is to be done through international cooperation.

UNESCO is a catalyst for international cooperation and this function is central to UNESCO's international 7___.

A clear illustration of UNESCO's catalytic role is its performance as 8___ and facilitator of the education for all (EFA) movement.

The work of international cooperation is never finished. In the period ahead, many meetings will take place that require UNESCO's 9___ and/or organization, and these meetings will have direct 10___ to the interests and needs of its member states.

1	A research	B innovation	C application	D advancing
2	A personal	B common	C individual	D national
3	A relations	B researches	C investigations	D principles
4	A helps	B provides	C implements	D emphasizes
5	A promote	B promotion	C realize	D carry out
6	A cooperation	B supervision	C development	D generalization
7	A mission	B conference	C participation	D endeavour
8	A coordination	B coordinator	C coordinated	D coordinating
9	A utilization	B creation	C participation	D significance
10	A preference	B influence	C preparation	D relevance

5. Give all possible derivatives of the following words:

to investigate, to coordinate, to analyze, to value, to promote, to estimate, to provide, to require, to create, to stimulate, to implement, to communicate, to reduce, to contribute, to exclude, to produce, to apply, to criticize, to participate, to provide, to evolve, to expand.

SECTION II

Speaking

1. Agree with the statements of your partner.

Example:

-International scientific cooperation is practiced in the sphere of science and technology.

-It is definitely right to say that international scientific cooperation is practiced in the sphere of science and technology.

- 1 Scientific knowledge has led to remarkable innovations that have been of great benefit to humankind.
- 2 Peaceful coexistence of nations is unthinkable without all-round scientific and engineering cooperation among nations.
- 3 Technological developments and the use of new energy sources have created the opportunity to free humankind from arduous labour.
- 4 Scientific and technological cooperation has always rested on the principles of equality and mutual advantage.
- 5 Our ability to communicate fast and easily has made life more enjoyable.
- 6 Today, more than ever, science and its applications are indispensable for development.
- 7 Progress in science makes the role of universities particularly important in the promotion and modernization of science teaching and its coordination at all levels of education.
- 8 The developed world has a responsibility to enhance partnership activities in science with developing countries and countries in transition.
- 9 Progress in science requires various types of cooperation at and between the intergovernmental, governmental and non-governmental levels.

10 International training centres are of great value for developing international cooperation.

2. Disagree with the statements of your partner.

Example:

- Many fields of science and technology can be developed effectively on a national scale, can't they?

- I am afraid you are wrong. There are fields which can not be developed effectively on a national scale.

- 1 The international character of fundamental research should be strengthened by increasing support for long-term research projects and for international collaborative projects.
- 2 Scientists are free of any ethical standards. Their mission is to produce knowledge.
- 3 All cultures can contribute scientific knowledge of universal value.
- 4 Scientists and researchers across the world have narrowed their participation in finding a coordinated solution for such global problems as atmospheric changes and reduction of ozone layer.
- 5 One can state that today universities are hardly interested to promote the development of science , technology, culture economics etc.
- 6 Today, we can state that the benefits of science are evenly distributed and all countries, including developing, do not find themselves excluded from the benefits of the basic sciences.

3. Agree or disagree with the following statements. Give your argument to support your viewpoint.

Example:

- I think scientists should concentrate their efforts only on the solution of national problems.

- I quite agree with you. National problems should be of primary concern to the scientists.

- You are right, but you can't deny that some of the problems may be of global character and can be solved more effectively by joint efforts.

- 1 The epoch of revolutionary discoveries in science has passed away. Science has slowed down its development.
- 2 In order to promote their research work universities have to participate only in UNESCO's projects.
- 3 Science is doing little to eliminate diseases and hunger, to provide mankind with food, energy, raw materials and preserve environment.
- 4 Scientific research in many spheres of fundamental knowledge is a waste of money. We must concentrate on the vital problems and threats facing humanity.
- 5 Extensive international scientific exchange programmes lead to "brain drain".
- 6 Belarusian scientists should develop their cooperation with Russia which is our strategic partner in all spheres of life.

4. Make up questions to which the following phrases are the answers. The dialogue is between a newspaper correspondent and a participant of an international conference.

The correspondent: ___?

The participant: I am from Kazakhstan. I am delegated by the Academy of Sciences of our country to take part in this conference as the problems to be discussed here are of great importance for us.

The correspondent: ___?

The participant: Our interest to the conference is quite natural and it is primarily connected with our concern about the ecological problems in our region.

The correspondent: ___?

The participant: Yes, our Academy is an active member of many international ecological projects and we are sure this cooperation is highly beneficial for our country and common cause.

The correspondent: ___?

The participant: Yes, I am going to make a report on the problems of the Aral Sea in connection with the diversion of the waters of the Syr Darya and the Amu Darya rivers for irrigation that has led to an overall reduction of its surface area by half.

5. Read the following dialogues in parts and act them out using modifications.

Dialogue 1

Nick: Hi, Mike. I haven't seen you for ages. How are you? I have heard you have just returned from Germany.

Mike: Hi, Nick. Really, I returned from Germany a few days ago.

Nick: Where did you stay there?

Mike: Well, you know I went there on a Students' Exchange Programme. I spent 3 months at Wuppertal Higher Institution. This is an institution our department keeps close relations with. So every year a group of students goes there to take a course of information technologies, web design or some other subjects.

Nick: Excuse me, what language did you use in class?

Mike: There were several groups in which teachers delivered lectures in English, but mostly it was German. I attended the classes where English was used.

Nick: Did you have any problems with your English?

Mike: At the beginning, yes, it was rather difficult but in a week or so I got used to it. Of course, there were cases when we had to ask for explanations but in general I was fine.

Nick: Excuse me, how can one become a participant of a students' exchange programme?

Mike: Oh, it is a long story. First of all, you should do well in all your special subjects and besides you should be good at German and English. To master them well it is recommended to take a special language course either at the university or some other place.

Nick: Thank you for your advice and, excuse me, the bell has gone, the lecture is beginning. I shall call you these days. I hope you will tell me more about your educational experience in Germany and the life there.

Mike: O.K. See you.

Nick: See you.

Dialogue 2

The correspondent: Professor Hawk, every year you are invited to take part in the Conference held under the auspices of our university. Can you share your impressions on the way it was organized and held?

Pr. Hawk: You are quite right saying I am here not for the first time. Every time I come here, I meet the colleagues I know very well and it is always a pleasure to exchange views and opinions on the new findings and approaches in our sphere.

The correspondent: Professor, I know your laboratory keeps close relations with some of our laboratories. Has the cooperation brought any results?

Pr. Hawk: Yes. We are satisfied with our collaboration. Thanks to the close cooperation of our laboratory with your departments of electronics we have greatly accelerated our experimental work in the application of new methods of heat transfer process modeling and analysis.

The correspondent: What will you say about the discussions at the conference?

Pr. Hawk: Concerning the questions being discussed at the plenary meetings, I would say they prove that scientific research today in our sphere requires an interdisciplinary approach. That sets forward the necessity of developing cooperation between scientists in different subjects.

The correspondent: Many participants of the conference emphasize the necessity of expanding scientific exchange programmes as one of the effective forms of cooperation.

Pr. Hawk: I absolutely agree that such forms contribute greatly to accelerating progress in scientific research, developing friendly relations between scientific centres as well as between people. Joint efforts make people closer and make the way to success easier.

The correspondent: Thank you, professor.

Pr. Hawk: Thank you, sir.

6. Make up a short dialogue to the following situation:

You want to know everything you need to apply for participation in a scientific exchange programme.

7. Read the text below to find the answers to the following questions:

- a What principles is the scientific and technological cooperation based on?
- b What is the role of scientific cooperation in strengthening peace and friendship in the world?
- c What are the forms of scientific and technological cooperation?

The Aims and Principles of the International Scientific Cooperation

1. It is hard to imagine peaceful coexistence of nations without all-round scientific and engineering cooperation among the states. Moreover, there are fields which can not be developed effectively on a national scale, such as environmental protection, space exploration, and development of nuclear and solar energy or the rational use of the ocean's resources.

2. Scientific and technological cooperation between different countries has always rested on respect for sovereignty, equality and mutual advantage. International contacts in science and technology have been regarded as a means of speeding up socio-economic progress of all the countries. Universality, freedom and critical thinking constitute basic elements in the scientific process and form a common bond between all cultures. Accordingly, science can make a significant contribution to constructive dialogue between different cultures and thereby act as a powerful antidote to intolerance and to ideological and racial barriers. Moreover, the progress and application of scientific knowledge can offer effective means for solving many of the problems which face humanity, including those generated by the misuse of science.

3. Recognizing the important and distinctive potential of science to contribute to a better future for mankind, the world scientific community emphasizes its adherence to the following principles:

- respect for the diversity of cultures within societies and promotion of science as a distinctive and important contributor to bridging such diverse cultures and promoting peaceful coexistence in accord with the principles of freedom, autonomy and rationality;

- mutual cooperation, reflecting the recognition that the production and utilization of scientific and technological knowledge are decisive for the future welfare of humanity and that science, with its universality, is uniquely positioned to serve as a laboratory in which mankind can work together to achieve a better future in accord with the principles of responsibility, solidarity and respect for the rights of individuals and nations.

4. A great number of scientists from different countries, as well as from Belarus, are involved into the realization of different international projects sponsored by numerous international organizations and funds: UNESCO, WHO, WMO, CERN,

ISO, ICSTI, JINR, IAEA etc. The spheres of joint endeavour include nuclear energetics, space research, geology and geophysics of the world ocean, different branches of medical sciences, microelectronics, bioorganic chemistry, transport engineering, telecommunication equipment, information technologies etc.

5. The active exchange of information at the international meetings, scientific congresses, conferences and symposia, experts and students exchange programmes facilitate establishing close relations between scientists, open new opportunities for coordination of joint efforts in solving the most urgent problems, accelerate dissemination of new knowledge and advanced technologies improving the life of humankind.

Notes:

UNESCO	<i>United Nations Educational, Scientific and Cultural Organization</i>
WHO	<i>World Health Organization</i>
WMO	<i>World Meteorological Organization</i>
CERN	<i>Conseil Européen pour la Recherche Nucléaire (фр)</i> - International scientific organization established for collaborative research into subnuclear physics
ISO	<i>International Organization for Standardization</i>
ISTP	<i>International Centre for Scientific and Technical Information</i>
JINR	<i>Joint Institute of Nuclear Research</i>
IAEA	<i>International Atomic Energy Agency</i>

8. Go back to passage 1. Look it through and say why it is important to develop all-round scientific and engineering cooperation among the states. Give your examples to prove that some problems can be solved only with joint efforts.

9. Scan passage 2 and say if you agree with the author's idea that science can make a significant contribution to a constructive dialogue between different cultures.

10. Scan passage 3 and say what main principles of scientific cooperation are mentioned by the author. What do the words "responsibility" and "solidarity" mean when speaking about scientific and technological knowledge and its application?

11. Scan passage 4. Give your examples of Belarusian scientists' participation in cooperative activities.

12. Finally skim passage 5 and speak about the forms of international cooperation. Do you know anything about the participation of our university in the international activities and its connections with foreign partners?

13. Read the text below to find out the answers to the following questions:

a Why can we say that in some way any research result is additive and collective in

- its nature?
- b What are the objectives of any research?
 - c What advances facilitate the international cooperation between scientists, laboratories, universities etc?

Scientific research and its impact on international cooperation

1. International cooperation in the field of research and knowledge seeking activities has a long history. Scientific and research activities of scientists and researchers in the course of history have constantly crossed the international frontiers. As such it has provided appropriate ground for the strengthening of interaction and transaction links between nations, cultures, and civilization and ultimately for materialization of internationalization. Many of today's tactics, techniques and technologies, which have had an improving bearing on the personal, professional and scientific life, are the result of collective and international research activities of researchers, inventors, and other scientists across the geographical and cultural boundaries.

2. In fact the nature of research is such that in any specialized field it has the characteristics of being additive and collective; it is so because every new research activity is, somehow, based on earlier discovered facts made by other researchers and scientists. At the same time the result of each research work provides the basis for future research activities. In the light of this it becomes clear that advances in sciences and technology are constantly contributed by international cooperation. Without the collective participation and international cooperation, one could not imagine that the human science could expand with such a speed and dimensions. As a conclusion, research per se is an objective and collective issue in which the incentive to do research and extend the scientific cooperation, the intrinsic curiosity of researchers and scientists and their common area of interest for discovery, production, expansion and the application of science, all have been manifested with least biased ideological, political, and geographical constrains.

3. The objective of any research activities is to discover and produce knowledge, to organize, apply and publish the research findings in order to surmount human problems and achieve the ideals and bring about a better outlook for humankind. All research activities, from fundamental to applied, and development research benefit from a global collective approach. Fundamental research that focuses on the production of globally shared knowledge provides its findings to other nations and creates a common pool of ideas, resources, and technological know-how. This in turn provides the ground for universities to engage in international transactions. In addition to this, the participation and cooperation extended by researchers in various universities towards the production of knowledge will lead to the creation of new fields and would strengthen the inter-disciplinary links amongst universities. But on the other hand, the existence of common issues and difficulties in scientific, social, political, and cultural fields, and the hardships in the application of scientific approach to prevent and eliminate these issues have paved the way for

internationalization of universities. And the creation of a commitment for finding a common solution for international problems and conducting common projects, altogether have served to bring researchers throughout the world close to each other.

4. Beside the fact that the major part of inputs used in research are the result of international efforts and activities, the output and the result of university research, which is mainly the production of knowledge, belongs to all humankind irrespective of where it has been achieved. It is so due to its collective nature. As such it is being used by all nations beyond geographical and cultural boundaries. In the light of these features, it is believed that research results provide a cultural referential research as a ground for cooperation and interaction at international level. University research has brought vast remarkable achievements in different areas of science and technology, cultural and social issues, politics and economics. These achievements have been the result of international research, activities, and efforts over different periods of history, supported by an environment of collective participation of all nations in which each nation has had a relative share.

5. Advancement in information technology has changed the mode of international scientific communication. As a result of this, scientists, researchers, and all those interested in knowledge and research can now communicate with their counterparts across the world in a shortest time. They can exchange their research findings and establish a synergetic system. Such developments ultimately enhance and promote the scientific environment to flourish. Expansion of information networks paralleled with increase in knowledge about research areas and international capabilities on the one hand, and removal of geographical boundaries, increase in accessibility to research findings of others throughout the world on the other hand, have acted as catalyst to international cooperation. In addition to this, research findings with the creation of an open academic environment have provided signposts for internationalization and strengthened its scientific credibility.

14. Go back to passage 1. Look it through and approve or disapprove the author's idea that international cooperation in the field of research and knowledge has provided the ground for the strengthening of interaction and transaction links between nations and cultures. While expressing your opinion use the following expressions of *agreement / disagreement*:

I am of the same opinion; I fully support the idea that ...; The author is right in saying that ...; I am sorry to say that the author is not completely right that ...; My opinion is somewhat different from ...; I am afraid the author has a biased opinion in saying that ...

15. Scan passage 2. Using the information it contains in small groups discuss the additive and collective nature of research. Do you agree with the author that every new research activity is based on earlier discovered facts? Can the story of the periodic table of chemical elements of Mendeleev be considered a proof of the additive nature of research? Give more facts of the kind from the history of scientific development.

16. Skim passage 3 and say what the author means saying “internationalisation of universities”. Speak how globally shared knowledge is produced? What is the role of university research in this process?

17. Look through passage 4. Using the author’s ideas and your own experience discuss the benefits of scientific cooperation and interaction at international level. Do you agree that university research belongs to all humankind? Give examples of scientific contacts and joint research of your university with universities of other countries. In what fields of knowledge has Belarus had a relative share?

18. Finally, skim passage 5 and speak about the role and influence of modern information technologies in international scientific communication. Use the following word-combinations and phrases in your discussion:

as a result of this; communicate with the counterparts across the world; exchange research findings; on the one / on the other hand; open academic environment; strengthen scientific credibility.

19. Using the information of the text in small groups discuss the ways and the advantages of scientific research without boundaries.

SECTION III.

Reading.

1. Starter activity. Before you read the text name the major problems that need joint international efforts for their solution. Read the text and say what other problems could be added to those mentioned in it.

Challenges for UNESCO and international community

In the years to come, a major challenge for the international community will be to ensure the free flow of, and equitable access to, knowledge, information, data and best practices across all sectors and disciplines. For the free flow to be meaningful, access to knowledge will not be enough. Other needs must also be addressed, such as building human capacities and technical skills and developing effective ways to translate knowledge and information into assets of empowerment and production. UNESCO will be called upon to contribute to all these challenges. In particular, the organization must seek to reinforce the right to education, to strengthen international scientific and intellectual cooperation, to protect cultural heritage (including the increasingly important intangible heritage), to promote media development and to broaden public domain access to information and knowledge.

Above all, UNESCO's mission to promote improvements in all types and levels of education, but especially quality basic education for all, is essential to the full range of our tasks.

The right to education is a human right and unless it can be secured, all other goals are bound to suffer. It is vital and urgent that the right to education is transformed from ideal to reality: today, even after decades of effort, over 100 million children still do not attend school and 150 million drop out without learning to read, write and use numbers. Gender inequalities constrain access and achievement. The illiteracy of 900 million adults limits their individual growth and the social development of their communities. While in relative terms progress has been registered, in absolute terms the numbers have grown dramatically on a global scale and for many regions. Again, this situation is unacceptable and must be addressed.

Education will also be a key feature in the global campaign to fight HIV/AIDS. The impact of HIV/AIDS and other infectious diseases in many countries is as devastating as any war. The HIV/AIDS pandemic not only hampers development, it also reverses it by destroying capacity in all areas of social endeavour. In the period ahead, UNESCO's strategy to combat the spread of HIV/AIDS will place particular emphasis on effective preventive education.

Recently, much international attention has been paid to the so called "digital divide". It accentuates disparities in development, excluding entire groups and countries from the potential benefits of digital opportunities in networked knowledge societies. Bridging the digital divide between developing and developed countries and within individual countries will thus become a prime strategic challenge pervading UNESCO's activities. This will entail activities to strengthen capacities and skills, to generate new knowledge, to enlarge access, to foster scientific research and to share knowledge and information through networking and the communication media and information systems.

Given the enormous speed of scientific discoveries and advances, there is an increasing need for international scientific and intellectual cooperation. The 1999 World Conference on Science has charted the way for UNESCO to support and promote scientific co-operation at all levels, drawing on its unique comparative advantage of combining natural and human sciences under one roof.

UNESCO will also be challenged to play a central role in bridging the divide between traditional knowledge and scientific knowledge in ways that respect the contributions that both can make. Developments in biogenetics, new medical discoveries and other scientific and technological advances increasingly require the attention of careful ethical reflection and, possibly, normative action through the elaboration of pertinent policies and standard-setting instruments. UNESCO has an obligation to live up to its ethical mission in these areas, which are largely unattended by other multilateral organizations.

In light of these on-going and new global challenges, UNESCO's future mission is based on three main strategic thrusts. These three distinct, yet interrelated, axes are:

- developing universal principles and norms, based on shared values, in order to meet emerging challenges in education, science, culture and communication and to protect and strengthen the “common public good”.

- promoting pluralism, through recognition and enhancement of diversity together with the observance of human rights.

- promoting empowerment and participation in the emerging “knowledge societies” through capacity-building and sharing of knowledge.

This, in brief, is what we aim to accomplish within the next few years. You will agree, I am sure, that this is an ambitious agenda and one that no agency can hope to fulfill solely by its own efforts. Partnership and collaboration are essential.

UNESCO recognizes that the speed of change today not only requires flexibility but also rapid communication with partners and supporters. This flexibility may well be needed during the period of the medium-term strategy, parts of which may be overtaken by events of which we have no advance knowledge or warning. As we have noted earlier, globalization is generating new ethical challenges and dilemmas for which existing international norms and principles may be quite inadequate.

2. Read the text and answer the following questions:

- a** What is the function of science in the society?
- b** Can we say that today the benefits of science are equally distributed between the countries of the world?
- c** What benefits has science brought to the society?
- d** Why is it so vital today to debate the way of scientific knowledge production, its use and distribution?

Science for Society

Today, more than ever, science is a vital source of educational, intellectual and cultural enrichment. When we talk of knowledge societies and knowledge economies, we are in practice pointing out that they are, in a fundamental way, science-based.

Science leads to technological advances and economic benefits that offer unique opportunities to meet basic human needs, reduce poverty, protect the environment and improve the quality of life.

The promotion of science and the use of its fruits require sustained political commitment and long-term action.

The essential function of the basic sciences is to carry out a thorough inquiry, leading to new scientific knowledge that enhances our understanding of natural phenomena. Increasingly, however, the “disinterested” model of scientific endeavour does not correspond to a reality in which there are strong expectations that science should lead to technological advances and improve people’s lives.

However, there are tensions here.

Although the basic sciences have nowadays become an indispensable tool for development, the benefits of science are still unevenly distributed. Many developing countries in particular find themselves largely excluded not only from the benefits of

the basic sciences but also from the very processes through which scientific knowledge is generated.

Of the many divides in our world, the knowledge divide is one of the most fundamental and the basic sciences are implicated in this. The deepening divide between North and South in science education, scientific research, technology, agriculture, health care and information technology is part cause, part effect of a development divide.

When talking about “challenges for science in the twenty-first century” one must recognize that, by its very nature, science is a cooperative endeavour and an activity without national borders. It has a remarkable capacity to mobilize intellectual effort on both theoretical and practical problems. By sharing scientific knowledge and joining together in making advances in science and technology, scientists are utilizing powerful means to promote international cooperation.

Scientific knowledge has led to remarkable innovations that have been of great benefit to humankind. Life expectancy has increased strikingly, and cures have been discovered for many diseases. Agricultural output has risen significantly in many parts of the world to meet growing population needs. Technological developments and the use of new energy sources have created the opportunity to free humankind from arduous labour. They have also enabled the generation of an expanding and complex range of industrial products and processes. Technologies based on new methods of communication, information handling and computation have brought unprecedented opportunities and challenges for the scientific endeavour as well as for society at large. Steadily improving scientific knowledge on the origin, functions and evolution of the universe and of life provides humankind with conceptual and practical approaches that profoundly influence its conduct and prospects.

At the same time, science itself is undergoing rapid change, with an “explosive” development of new fields, concepts, methodologies and potential applications.

It is often difficult to see the long-term consequences of scientific advance and its applications, and this heightens our sense of vulnerability. But it has also raised important moral, social, legal and cultural challenges.

The convergence of the information and life sciences has led to considerable progress in genetics and biotechnology. Human life, even the concept of life itself, is now challenged by advances in the biosciences and by the development of biomedical and genetic techniques.

Today, whilst unprecedented advances in the sciences are foreseen, there is a need for a vigorous and informed democratic debate on the production and use of scientific knowledge. Greater interdisciplinary efforts, involving both natural and social sciences, are a prerequisite for dealing with ethical, social, cultural, environmental, gender, economic and health issues.

Most of the benefits of science are unevenly distributed, as a result of structural asymmetries among countries, regions and social groups, and between the sexes. As scientific knowledge has become a crucial factor in the production of wealth, so its distribution has become more inequitable. What distinguishes the poor (be it people

or countries) from the rich is not only that they have fewer assets, but also that they are largely excluded from the creation and the benefits of scientific knowledge.

One of the main challenges facing the basic sciences today is the fact that fewer and fewer talented youngsters seem to be interested in science, a global trend that seems to be leaving the faculties of mathematics, physics and chemistry empty. The general public seems ready and willing to use the latest products of scientific and technological ingenuity but is less interested in science itself. And young people are increasingly turning away from science as a career. This is a worrying trend, the reasons for which are multiple and complex. This decline of interest in science and scientific careers must be counteracted for it threatens the sustainability of the scientific enterprise itself and, by extension, the prospects for using science for development.

Another challenge, of course, is the brain drain. For developing countries to be in a position to exploit what science offers, there is a clear need to build a critical mass of people involved in science and technology. Continual, large-scale brain drain, however, is a serious challenge to efforts to nurture and maintain sufficient numbers of highly qualified and innovative scientists and engineers. Effective encouragements need to be found to induce them to remain in or return to their countries. Strategies to facilitate this need to be developed, such as the building of working connections between research groups in major educational and research institutions in the North and counterparts in the South; setting up centres and networks of excellence; and creating innovative partnerships.

Another operational issue to address as a priority is the involvement of industrialists in the common action supporting science for development. It is also essential to involve industry in their deliberations and debates, especially on development issues. The improvement of science-industry cooperation is not always easy but, if successful, it opens up important possibilities for all concerned.

The problems the human society is facing today are numerous and diverse. They can be solved with greater success and no doubt in a shorter time if we manage to unite our efforts and promote cooperation worldwide.

Comprehension check

1. Define the statements as true or false.

- 1 Society does not expect any technological advances and economic benefits from science that can improve its life.
- 2 Today, one can surely say that the problem of “knowledge divide” is still vital.
- 3 Joint efforts of scientists have led to remarkable innovations that have been of great benefit to humankind.
- 4 The improvement of science-industry cooperation brings about great prospects for the development of mankind.

2. Complete the following:

- 1 The essential function of the basic sciences is ___.
- 2 The benefits of science are still unevenly distributed and many ___.

- 3 The gap between rich and poor countries or peoples finds its reflection not only in ___.
- 4 We must recognize that by its nature science is ___.
- 5 Among the remarkable innovations that have been of great benefit to humankind we can mention ___.
- 6 Because of rapid development of science , it is often difficult to foresee ___.
- 7 Fewer and fewer young people are ___.
- 8 Widening of science-industry cooperation will ___.

3. Find the passages in the text about:

- 1 the essential functions of sciences;
- 2 science as a tool for the development of society;
- 3 remarkable advances brought by joint efforts of scientists from different countries;
- 4 knowledge divide between rich and poor countries;
- 5 the problem of brain drain;
- 6 science industry-cooperation.

4. Answer the following questions on the text:

- 1 What do we mean by saying “science based societies or economies”?
- 2 Is it true to say that science itself is living through a hard period?
- 3 Society has to set up certain ethical rules for scientists to keep to, doesn't it?

5. Before you read the text say what science organizations you know and what role they perform in the society. Do you think science organizations help scientists in their work? Read the text and check your answers.

Science Organizations

In addition to publications, scientists form associations with other scientists from particular fields. Many scientific organizations arrange conferences that bring together scientists to share new ideas. At these conferences, scientists present research papers and discuss their implications. In addition, science organizations promote the work of their members by publishing newsletters and Web sites; networking with journalists at newspapers, magazines, and television stations to help them understand new findings; and lobbying lawmakers to promote government funding for research.

The oldest surviving science organization is the Accademia dei Lincei, in Italy, which was established in 1603. The same century also saw the inauguration of the Royal Society of London, founded in 1662, and the Academie des Sciences de Paris, founded in 1666. American scientific societies date back to the 18th century, when American scientist and statesman Benjamin Franklin founded a philosophical club in 1727. In 1743 this organization became the American Philosophical Society, which still exists today.

In the United States, the American Association for the Advancement of Science (AAAS) plays a key role in fostering the public understanding of science and in promoting scientific research.

AAAS was founded in 1848 for the purpose of advancing science in the New World in every feasible way. The association emphasizes the unity of interest of workers in all branches of science, which it promotes through the publication of reports and the organization of meetings. One of the largest associations of scientists in the world, it has some 285 affiliated and associated societies, covering the entire field of pure and applied science. It is grouped in 19 sections: mathematics; physics; chemistry; astronomy; geology and geography; biological sciences; anthropology; psychology; social and economic sciences; history and philosophy of science; engineering; medical sciences; dentistry; pharmaceutical sciences; agriculture; industrial science; information, computing, and communication; atmospheric and hydrospheric sciences; and social impacts of science and engineering. The association publishes the weekly magazine *Science*, as well as various symposium volumes. It has produced new materials for the teaching of science from kindergarten through the elementary grades.

Headquarters of the AAAS is located in Washington, D.C. There are similar organizations that have been established in several other countries, as, for example, the British Association for the Advancement of Science and the Institut de France.

Since the late 19 century, communication among scientists has also been improved by international organizations, such as the International Bureau of Weights and Measures, founded in 1873, the International Council of Research, founded in 1919, and the World Health Organization, founded in 1948. Other organizations act as international forums for research in particular fields. For example, the Intergovernmental Panel on Climate Change (IPCC), established in 1988, assesses research on how climate change occurs, and what effects change is likely to have on humans and their environment.

SECTION IV

Writing

- a Find additional information about major international organizations and write a short report.
- b Write an essay (250-300 words) about scientific relations of our university (your department, the Belarusian Academy of Sciences) with the universities of different countries of the world.

UNIT 4
ATTENDING A CONFERENCE

SECTION I
Language focus

1. Read the dictionary definition of “conference” given below.

Conference – 1) a meeting at which formal discussions take place.

E.G. The Managing Director has daily conferences with the other staff members.

• If someone is in conference, they are having a formal meeting.

E.G. ... the time he must spend in conference listening to reports.

2) a meeting about a particular subject, often lasting a few days.

E.G. ... a conference on nuclear disarmament in London.

2. Make up English-Russian pairs of the words and word-combinations equivalent in meaning.

- | | |
|---|---|
| 1 abstracts of papers | a бюро информации |
| 2 accommodation (for participants) | b включить доклад в программу конференции |
| 3 agenda | с выступать |
| 4 application form | d заседание с представлением стендовых докладов |
| 5 attendance | е заявка |
| 6 attendee | f краткий доклад |
| 7 communication | g научный доклад |
| 8 information desk | h научный сотрудник |
| 9 motion | i открывать (конференцию) |
| 10 paper | j пленарное заседание |
| 11 plenary session | k повестка дня |
| 12 poster session | l предложение |
| 13 scientific associate | m присутствие |
| 14 section session | n проводить конференцию |
| 15 summary paper | o размещение участников |
| 16 the symposium proceedings | p регламент |
| 17 time-limit | q секционное заседание |
| 18 to call a conference | г созывать конференцию |
| 19 to declare open | s сообщение |
| 20 to hold a conference | t тезисы докладов |
| 21 to schedule a paper for a conference | и труды симпозиума |
| 22 to take the floor | v участник |

3. Match the definitions below with the words in the list.

- | | | | |
|----|----------------|---|---|
| 1 | proceedings | a | the written records of what is said or decided at the meeting |
| 2 | abstract | b | someone who takes part in a conference |
| 3 | interpreter | c | a formal decision taken at a meeting by means of a vote |
| 4 | vote | d | a discussion in which people express different opinions about a subject |
| 5 | resolution | e | a person who has been chosen to act on behalf of another person or a group of people |
| 6 | chairman | f | your choice in an election or at a meeting where decisions are taken |
| 7 | debate | g | a list of the items that have to be discussed at a meeting |
| 8 | minutes | h | a suggestion formally put before a meeting, which is the subject of arguments for and against, and that is accepted or refused according to the number of those who express agreement or disagreement |
| 9 | welcome | i | to be in charge or act as the chairperson at a conference |
| 10 | preside | j | you greet people in a friendly way when they arrive at the conference |
| 11 | motion | k | the person in charge, who decides when each person is allowed to speak |
| 12 | participant | l | a long essay written on an academic subject |
| 13 | paper | m | a short piece of writing that summarizes the main points of paper |
| 14 | agenda | n | a person whose job is to listen to what someone is saying and translate it immediately into another language |
| 15 | representative | o | the records or minutes of the meetings |
| 16 | translator | p | a person whose job involves translating writing or speech from one language to another |

4. Complete the collocates below by matching a noun from A with a noun from B. Some can combine with more than one noun.

Example: world conference, research

- | | | | | | |
|---|--------------|--------------|---|------------|------------|
| A | absentee | mother | B | address | meeting |
| | application | panel | | committee | paper |
| | ballot | poster | | delegate | programme |
| | coordination | recreation | | desk | report |
| | draft | registration | | discussion | resolution |
| | entry | section | | fee | session |
| | expert | study | | form | tongue |
| | information | welcome | | group | visa |
| | lecture | | | hall | |

5. Underline the correct word A, B, C or D to fill the gaps.

Videoconference

Tomorrow's scientific fiction has become today's new technology – a daily reality for global companies who recognize the importance of regular 1__ between groups of people in different locations around the world.

Essentially the videoconference room 2__ a usual conference room. 3__ sit along one side of a table facing their colleagues on screen on the other side. They can see, hear and talk to each other simultaneously and can 4__ slides of diagrams, even pieces of equipment. The 5__ is relatively simple. A device called 6__ takes the picture, digitalizes it for transmission over a special network and reforms the picture at the other end.

The problem today is to manufacture codec to the new international standard and to improve picture quality through faster 7__ speeds. Research and development is also focusing on mobile 8__ with broad cast quality pictures which enable to have instant communication with colleagues around the world.

There is no doubt about the effectiveness of videoconferencing, as the videoconference eliminates 9__ lost through travel.

- | | | | | |
|---|---------------------|-----------------|----------------|--------------|
| 1 | A resolution | B communication | C speech | D address |
| 2 | A attends | B remembers | C motivates | D resembles |
| 3 | A delegates | B deputies | C publishers | D editors |
| 4 | A print | B adopt | C present | D report |
| 5 | A technology | B subject | C viewpoint | D opinion |
| 6 | A projector | B loudspeaker | C microphone | D videocodec |
| 7 | A registration | B discussion | C transmission | D motivation |
| 8 | A videoconferencing | B assembly | C colloquium | D congress |
| 9 | A time-limit | B time-table | C working time | D minutes |

6. Give all possible derivatives of the following words:

to submit, to attend, to invite, to create, to effect, to inform, to register, to solve, to equip, to delegate, to represent, to participate, to discuss, to resolve, to elect, to arrange, to accept, to apply, to declare, regular, research, member, to present, to contribute, to communicate.

SECTION II

Speaking

1. Agree with the statements of your partner.

Example:

– *Every society, whatever its size, must call its members together once a year for an annual general meeting.*

– *Yes, you are quite right. It's necessary to call the members of every society together for an annual general meeting.*

- 1 The main purpose of a conference is to provide a forum for experts of diverse disciplines to come and exchange information and ideas. Is it true?
- 2 The conferences contribute to stimulating cross-fertilization of fresh ideas and accelerating progress in the field of science and technology. What do you think of this?
- 3 Everyone attending the conference is required to register and pay the appropriate fee. Is it true?
- 4 The speakers should be brief, factual and avoid personal opinion. Do you think it's right?
- 5 The organizing committee should be careful not to allow an overlap of the conference dates. Am I right?
- 6 Scientific discussions are always useful because they contribute to general scientific advance. Are you of the same opinion?
- 7 The problem under investigation is of great importance. Do you agree with that?
- 8 The sessions were concerned with important present-day problems, weren't they?

2. Disagree with the statements of your partner:

Example:

- *The chairman should always sit to address the meeting.*
- *I'm afraid you are mistaken. The chairman should always stand to address the meeting.*

- 1 Minutes are an approximate record of what takes place at a meeting. Am I right?
- 2 A conference is an entertainment from a daily research routine, isn't it?
- 3 The first duty of a chairman is to make a report. Is this right?
- 4 At the conference with numerous participants the papers are read at one section one after another. Am I right?
- 5 The agenda can't be carefully timed and overcrowding avoided. What do you think of it?
- 6 If am not mistaken the opening ceremony was followed by a banquet. Is it so?
- 7 This conference was attended by very few delegates. Is this right?

3. Agree or disagree with the following statements. Give your arguments to support your viewpoint.

Example:

- *I know you like to attend scientific conferences.*
- *Yes, you are right. Besides, I also like to be a member of the organizing committee.*
- *No, I see you are misinformed. I think attending conferences is a waste of time.*

- 1 Several delegates had come long before the session began.
- 2 The seminar will be held in room 6.
- 3 The majority of the participants were accommodated in hotel "Belarus".
- 4 The discussions were exceedingly lively.
- 5 The greatest part of the material has been verified experimentally.
- 6 Over 50 papers and reports were submitted.
- 7 There will be many participants at the conference sponsored by our department.

- 8 There are very many unsolved problems in this field.
9 This paper was published in the latest issue of the journal.

4. Answer the questions below.

Example:

- *I regularly attend international conferences. And what about you?*
– *I don't have the possibility to take part in international conferences abroad but I am a regular participant of different international conferences in our country.*

- 1 A conference is a very important event in a researcher's life. What do you think of it?
- 2 I usually submit my papers in Russian but this time I'll do it in English. And what about you?
- 3 I like to take part in the poster sessions which constitute the usual short communications of recent research data. What is your idea of this?
- 4 The organizing committee has accepted my paper to be included in the programme for the conference. And what about your paper?
- 5 I have just registered as a member of congress at the congress office. And have you done the same?
- 6 I have already received an invitation to the international conference? And you?
- 7 I'll make a report on research in progress at our laboratory. Do you think I should?

5. Paired practice. Read the following statements aloud. Let your partner respond by expressing thanks. Change the roles as you go. Use the patterns below.

Thank you very much; many thanks; thanks a lot; thank you for the pleasure; that's very kind of you; you are very obliging; I'm very grateful to you.

- 1 The subject of your contributed paper has given us sufficient food for thoughts. We invite you to take part in the international conference which is going to be held in the Academy of Sciences in the nearest future.
- 2 To my mind your method of investigation is the most efficient.
- 3 Your report on Information Technology has made a great impression on the editor-in-chief of our journal. He wants to publish it.
- 4 Sightseeing tours will be arranged for the conference participants. We invite you to join us.
- 5 Interpreter will provide simultaneous translation of your paper.
- 6 You can use my method of investigation in your research.
- 7 You will receive in advance a copy of the conference publication containing the texts of the contributions

6. Make-up questions to which the following phrases are the answers. The dialogue is between the chairman of the organizing committee and a scientist (researcher) participating in the work of the conference.

Chairman: ___?

Researcher: Yes, I have. I submitted my contributed paper on March 15.

Chairman: ___?

Researcher: Certainly. I would like to take part in discussions in Section F.

Chairman: ___?

Researcher: I'm especially interested in Software Engineering.

7. Read the following dialogues in parts and then act them out using modifications.

Dialogue 1

A: When do I have to give my paper, Mr. Chairman? My name is George Brown.

B: Just a minute, Mr. Brown. Let me consult my notes. You know, there were some changes on the programme. Yes. You come third on the morning session.

A: I'm sorry to trouble you but is there any chance to put off my talk for the evening session? I need to be somewhere else in the morning and it's very important.

B: All right. It can be done. You'll be the first in the evening, at five o'clock to be exact. Does it suit you?

A: Oh, it suits me fine. Thank you so much.

B: Not at all.

Dialogue 2

A: May I have you for a few minutes?

B: Why, sure. What can I do for you?

A: I've just heard your paper. I'm very interested in your research as we seem to work on the same problem.

B: Well, that sounds very interesting, doesn't it? Shall we sit somewhere?

A: What about going to a cafeteria?

B: That would be fine.

Dialogue 3

A: My congratulations! Your paper was a real success.

B: Thank you. I'm very glad it was received so well.

A: Could we discuss some points which are not very clear to me?

B: Oh, yes. Unfortunately, I had to omit many details.

A: I understand you had too little time at your disposal.

8. Read the text below to find the answers to the following questions:

a Who organized the conference?

b What did the chairman say in his opening speech?

c What new procedure was introduced for scientific gatherings with numerous participants?

d What did Part I of the technical programme include?

e What did Part 2 of the programme consist of?

Attending a Conference

1. A conference is an important event in a researcher's life, particularly an international meeting, and Mr. White was very glad to receive an invitation to participate in the annual conference of the Electric and Electronics Engineers Society that was to be held in Geneva in March. It was run under the auspices of CERN (the European Organization for Scientific Research) and sponsored by the Convention of National Societies of Electrical and Electronics Engineers of Western Europe.

2. First of all, Mr. White had to send a short abstract of 200 words to the Programme Committee. This he did and his abstract was accepted. Soon he was informed that he'd better submit his paper 4 weeks before the conference. Mr. White sent his paper well in advance and also made a hotel reservation.

3. On entering the building where the conference was to take place Mr. White found himself in a familiar atmosphere characteristic of any scientific meeting anywhere in the world. There were groups of delegates everywhere, they talked mostly about science and discussed their research and results of work. Soon Mr. White entered the hall, he saw that many people were already seated with the printed programmes in front of them. Mr. White recognized some familiar faces.

4. The room hummed with conversation which gradually subsided as the chairman stood up to address the conference. This was Professor Hall, a very prominent scholar and a Nobel Prize winner. "Ladies and Gentlemen", he said. "I declare the Conference open. On behalf of the Organizing Committee and in my own name I wish to welcome the guests and the participants of the conference to Geneva. I wish you every success. I believe this assembly will provide an ample opportunity for everyone present to meet, exchange opinions and discuss scientific and organizational problems of common interest. My first and pleasant duty as a chairman is to introduce to you our honorary guest Professor Grant from the Cavendish Laboratory, Cambridge". An elderly white-haired gentleman stood up and everybody applauded.

5. When the conference was opened, the chairman read the agenda and explained briefly the work to be done. He informed that everyone who wanted to take the floor had to ask the chairman in advance or by simply raising his hand after the chairman opened discussion. He required every speaker to keep to the point, to avoid repetition and digression. If the chairman rose while a reader was speaking, the latter had to stop and take his seat if asked so. The chairman said that the conference would follow a new practice introduced for scientific gatherings with numerous participants: the papers were divided between sections and generalized by a principal speaker for each section with the discussion following afterwards.

6. Next day Mr. White was to read his paper on his latest research in semiconductor devices at one of the sessions. The chairman called the meeting to order, read the list of the speakers and the subjects of their reports and introduced Mr. White. In response to the chairman's introduction Mr. White rose to his feet, faced the hall and waited for the sound to subside. As soon as he was satisfied with the

silence, he began to speak. He spoke freely without looking into his notes and made every step of his reasoning very clear. When he finished speaking, the chairman called for questions.

After a short pause a man at the far end of the room rose to ask a question. Mr. White replied. The ice was broken and some minutes of general debate followed.

7. During the first two or three days of the conference there were many different things going on at once, and it was impossible to participate in all of them. The final session with review papers was of special interest to Mr. White for it summarized all that had been going on not only at the conference but also in his field of electronics for the past twelve months.

8. On the last day a one-day visit to see the electrical and electronics equipment for the new bubble chambers at CERN was arranged. The technical programme was divided into two parts. Part 1, from 10.30 a.m. to 1.30 p.m. included a presentation by a senior member of the centre on physical aspects of the bubble chambers, applications of superconductors, equipment and instrumentation operating in a strong electric field.

After lunch at CERN part 2 (3 p.m. – 5 p.m.) consisted of technical visits by groups of 10-15 people to see the bubble chambers, computers and photographic analysis, accelerators and power supplies for the accelerators.

The speakers for the demonstration used one of three languages – German, English or French – and a simultaneous translation into the other two languages was arranged. For the afternoon visits, the guides used one of these languages and the guests were grouped accordingly. A programme for ladies was organized, it included a visit to Geneva and its surroundings, together with a midday meal.

A contribution of 45 Swiss franks, which included the midday meal and bus fares was asked from the participants and accompanying persons.

The participants of this visit had to apply to the Director-General, enclosing details of their names, address, occupation, last institution membership, and whether they were going to be accompanied. Since the number of visitors to CERN was limited to 90, applications were dealt with in chronological order.

9. When the work of the conference was drawing to a close there was a conference dinner which was held in one of the city's biggest hotels. At the end of the meal, when everyone was feeling relaxed, Professor Hall, the oldest and by far the most distinguished of the delegates, rose to speak. "I propose a toast", he said, "to cooperation in the scientific community and continued progress in science". People were talking more animatedly. There were no longer any language barriers. Naturally, most of those present talked shop. Mr. White left the dinner with the feeling that the conference had definitely been a very interesting and useful experience.

9. Go back to passage 1. Look it through and comment on the sentence: "A conference is an important event in a researcher's life, particularly an international meeting". Prove your opinion by giving examples from your own experience.

10. Scan passage 2. Pay attention to the requirements to abstracts and papers sent to a conference. Say if it's sometimes possible to exceed the limit? In what cases can it be done?

11. Look through passage 4. What can you say about conference opening procedure? Discuss it with your partner. Use the following word-combinations in your discussion:

to address the conference, to declare the conference open, on behalf of the Organizing Committee, to welcome the guests and the participants, to wish success, to provide an opportunity, to exchange opinions, to discuss scientific problems, to introduce a honorary guest.

12. Scan passage 5 and decide what the phrase "a new practice introduced for scientific gatherings with numerous participants" means:

- a the papers are divided between sections
- b the papers are read at one section one after another

13. Look through passage 6 paying attention to Mr. White's report and general debate and then discuss them with your partner.

14. Scan passage 7 to find the information about the final session. Do you agree that review papers are of special interest to conference participants? Say why?

15. Look through passage 8. Pay attention to the technical programme of the conference. Discuss it with your partner. Use the following word-combinations in your discussion:

to arrange a one day visit; to be divided into two parts; to include a presentation; to consist of technical visits; to arrange a simultaneous translation; to group the guests; to ask a contribution from the participants; a programme for ladies; to apply enclosing details.

16. In passage 9 find the information about a big party held in one of the city's biggest hotels. Do you think social activities and parties are an important part of any conference? Why?

17. Learn and set out the dialogue. Make your own dialogue on the same subject.

Alex: Doesn't the Organizing Committee help with hotel reservations? What do you think of it?

Nick: They do, but you are right in a way, they are always so busy that you'd better be on the safe side and make your own reservation.

Alex: Do you think I'll be able to meet Dr. Green? I've been looking forward to this opportunity for years.

Nick: Well, highly probably, but he hasn't been feeling well lately, as far as I know. If you had attended the previous conference you would have met him for sure.

- Alex: Anyway, the greatest advantage of such a scientific conference is that we meet other scientists. Actually, I think that making a personal contact with people is sometimes much more important than listening to a talk or reading a paper.
- Nick: I agree. As you know, most conferences arrange a reception at the beginning where people can mix and get to know each other. And the conference dinner at the end usually puts a finishing touch to it.
- Alex: Do you think so? It sounds as though dinners and cocktail parties filled up the whole conference schedule.
- Nick: You know they don't. And how much time will you have for your paper presentation?
- Alex: No more than 15 minutes, I'm afraid, which is hardly enough to show 6 or 8 slides and discuss the results very briefly. When you think of all the work needed to produce those results ...
- Nick: True, but there's usually a very strict schedule.
- Alex: I know the chairman will not allow me to exceed my allocated time by more than one minute. There're as many as 12 or 15 papers in one session and it's essential to keep to schedule. Is there any social programme at a conference like this?
- Nick: Oh, yes, there will be some sightseeing tours arranged but it is sometimes difficult to fit them in one's daily programme. It is often hard to choose between seeing local sights and museums and listening to a paper.
- Alex: I understand what you mean.

18. Use the following situations to start a short talk:

- a You have arrived at a conference. Find out where and in what currency you can pay the registration fee.
- b You have received the conference folder with all the conference materials and cannot find in it the Book of Abstracts. Find out where you can get the missing copy.
- c Find out from a girl at the registration desk all about the cultural programme of the conference.

19. You have received an invitation to a conference. Tell us what kind of conference it is going to be.

- 1 Whether it will be a national or an international conference.
- 2 Where and when it is to be held.
- 3 Who the organizer and sponsor of the conference programme is.
- 4 Whether the problems on the conference programme are within the scope of your interests.
- 5 How you are going to present your material: whether it will be a poster presentation or you are going to read your paper.
- 6 How often such conferences are held in your field of science.

20. Discussion point.

Scientific international gatherings do not really matter that much if you want to be informed about the developments in a certain field of science. You can learn all you want from the Conference Proceedings. Is it true? Do you think conferences are important?

SECTION III

Reading

1. Starter activity.

Before you read the text below say how conference participants can use computers for preliminary information exchange.

Professional conference organizers see great hope in the use of computers to facilitate making contacts at conferences. This new technology can help both the young and the more established scientists find people with similar interests. Future conference participants will preregister their specific areas of interest and indicate their preferences for meeting in small groups or on a one-to-one basis. Each participant will also indicate the times he or she will be available. The computer will then match parties with the same interests and schedule contacts.

Conferences can be computerized by using a message processing system. Groups of terminals could be set up at the conference site with assistance available to help participants use them. To retrieve your message, you would simply type your name and registration number. All messages for you would either appear on the terminal screen or be printed out. Simple messages like “You left your coat in my car” could be stored. But, more important, a graduate student could ask, for example, if anyone at the conference would like to discuss his or her thesis topic. Or you could ask a question on a particular speaker that you didn’t have a chance to ask during the session. The speaker could answer the question some time later. You would find the answer when you interrogated the terminal the next day. This could help young scientists participate more fully since they are often reluctant to ask questions from the conference floor In the meantime, young scientists should try to discard their assumptions that eminent people are unapproachable.

2. Read the following text and look for the answers to these questions:

- a What is the requirement to the choice of words in writing scientific papers?
- b Why is it important to tie in with the readers experience?
- c What is the role of variety in academic writing?

“Keep sentences short. On the average, most sentences should be shorter than 25 words. But sentences should vary in length and structure.

Prefer the simple to the complex, avoid complex sentences and phrases.

Prefer the familiar word but build your vocabulary. If a reader doesn't understand your words, he can miss your meaning. But you may want to use long words in some cases – to clarify your point.

Avoid words you don't need. Extra words weaken writing. Make every word carry its own weight.

Put action into your verbs. Passive verbs tire the reader. Write "We intend to write clearly" not "Clarity in composition is our intention".

Use terms your reader can picture. Choose short, concrete words your reader can visualize, not abstract terms. Don't say "industrial community" when you're describing a "factory town".

Tie in with your reader's experience. The reader probably won't get your new idea unless you link it with an old idea he already understands. If you're describing how a new pump works, compare its operation with that of an old, standard pump.

Write the way you talk, or at least try for a conversational tone. People rarely use business jargon when they talk.

Make full use of variety. Vary the length of words and sentences and arrange them in different ways. Avoid monotonous patterns of writing.

Write to Express, not to Impress. Don't show off your vocabulary by using needlessly complex words".

3. Read the text "The World Conference on Computers in Education". Try to understand it and then do the tasks that follow.

The World Conference on Computers in Education

The World Conference on Computers in Education took place in Switzerland last month. This Congress brought together more than 1000 people concerned with the development and use of computers in primary, secondary and university education. This Conference was organized by the Swiss Federation of Automatic Control, on behalf of the International Federation for Information Processing (IFIP), and had the backing of UNESCO and the Intergovernmental Bureau for Informatics (IBI, Rome).

In addition to the Congress, a youth world computer programming tournament was being held in different countries; the national winners were invited to present their entry at the Conference.

At the same time, an exhibition was set up to present educational material and a range of hardware and software, going from the smallest personal computer to the largest distributed informatics network, a concrete illustration of the multiple resources of these techniques applied to teaching and education.

The Conference put the accent on the relations between informatics and the teaching of other disciplines (computers in the teaching of physics, humanities at school, engineering, economics and social sciences), on instructional techniques (large scale experiments in computer aided learning – CAL) and on the impact of

new technologies. Moreover, the social impact of informatics on teachers and students, as well as on leisure were discussed during WCCE.

Other participants presented reviews of national policies and models of computer education.

Comprehension check

1. Define the statements as true or false.

- a It was truly an international gathering, for one thousand delegates came from different countries of the world.
- b The Conference was organized by UNESCO.
- c A youth computer programming tournament was held during the Congress.
- d There was an attractive exhibition of modern books dealing with all aspects of teaching and education.
- e The main purpose of the Conference was the impact of new technologies on education.
- f Other participants presented reports from the research departments of different universities.

2. Complete the following:

- a The participants of the World Conference concerned with ...
- b The Conference was organized by ...
- c The Conference had the backing of ...
- d An exhibition was set up to present ...
- e The Conference put the accent on ...
- f A special emphasis was put on ...

3. Find the passages in the text about:

- a the place of the World Conference on Computers in Education;
- b the participants of the Conference;
- c the theme of the Conference;
- d a youth world computer programming tournament;
- e an exhibition of the multiple resources of techniques applied to education;
- f the relations between informatics and the teaching of other disciplines.

4. Answer the following questions about the text:

- a When did the World Conference on Computers in Education take place?
- b This Congress brought together people concerned with the development of computers in education, didn't it?
- c How many participants took part in the Conference?

SECTION IV

Writing

1. Write a composition in which you give a detailed account of a scientific gathering you attended. The questions below may guide you in preparing your composition.

- 1 Have you ever attended a scientific congress (conference, symposium)?
- 2 What problem was it devoted to?
- 3 When and where was it held?
- 4 Who was its president?
- 5 What was the approximate number of the participants?
- 6 Were there any foreign delegates invited and if so, in what way were language difficulties dealt with?
- 7 Where was the opening ceremony held?
- 8 Who lectured in the opening ceremony plenary session and what was the subject under discussion?
- 9 What was the number of sections at work and how many sessions were usually held simultaneously?
- 10 Were the abstracts of the main communications available to the delegates before the meetings?
- 11 Which of the problems touched upon attracted general attention and why?
- 12 Whom was the most significant communication at this conference given by?
- 13 What problems did it deal with?
- 14 Have you given a contribution at this congress (conference, symposium)?
- 15 How much time were you allowed to develop your subject?
- 16 How much time was set aside for discussions? Did this time prove adequate? Were the discussions usually lively?
- 17 Did you take part in any of these discussions?
- 18 When were the proceedings closed?
- 19 What was this congress (conference, symposium) especially noteworthy for?
- 20 Were there any interesting tours or excursions arranged for its participants?
- 21 How were the delegates accommodated?
- 22 Was there any banquet given to the participants and guests of this congress (conference, etc.)
- 23 Are you going to attend any other scientific gathering of this kind in the nearest future?
- 24 When and where is it going to be held?

2. Fill in the following Conference Registration Form. Be accurate in giving the requested information.

Conference Registration Form

First name:

Last name:

Rank/Titles:

Company/Govt. org.:
Address:
City: Post/ZIP code:
Country:
Tel.: Fax:
E-mail:

3. Study Call for Papers given below paying attention to its requirements. Then write an abstract of your paper to the conference complying with the requirements.

Call for Papers

Speakers desiring to submit papers should e-mail an abstract of at least 250 words along with a short CV/résumé of the speaker(s) to Jaroslav Dočkal (jaroslav.dockal@unob.cz) by January 15th, 2005. Please enter "SPI 2005" in the e-mail subject field. All abstracts should include the speaker's name and title. Abstracts must be in English, please prefer format. Kindly ensure that the abstract portrays the author's intent clearly and that it is an accurate reflection of the final paper. Also include the author's affiliation, address, phone/fax numbers and e-mail. You will receive a response to your submission by February 15th, 2005.

After notification of the paper's acceptance, authors will receive detailed instructions about the formal preparation of the manuscript. The deadline for camera-ready copies is March 15th, 2005. Please use the e-mail address jaroslav.dockal@vabo.cz for all correspondence. A maximum of 10 pages will be accepted. The time allotted for one speech is 15 minutes max. The conference program will be distributed by April 5th, 2005. Proceedings will have an ISBN.

4. Study the following visiting card and prepare your own visiting card of a conference participant:



UNIT 5 MASS MEDIA

SECTION I Language focus

1. Read the dictionary definitions of “media” and “medium” given below.

A media 1. The **media** are television, radio, and newspapers/magazines regarded as a group. The media entertain or spread news and information to a large number of people. E.G. *The news media are interested only in bad news ... The media is biased ... Figures have been boosted by pre-sales publicity in the media ... The policy shift was an apparent response to heavy media coverage ...* **1.2 Media** is a plural of medium.

B medium A **medium** is 2.1 a way or means of expressing your ideas or of communicating with people. E.G. *I went to secondary school in a country where English is not the medium of instruction ... He would prefer to be remembered for his talents in media other than photography.* **2.2** a substance or material which is used for a particular purpose or in order to produce a particular effect. E.G. *Air is a medium for sound ... I think watercolour is an extremely difficult medium to work with.*

In English, a distinction is made between the first and second senses of the term media by the use of a definite article. People talk about the media when they are referring to newspapers, magazines, television and radio, but media when they are using the word as the plural of 'medium'.

2. Now look at the following list. In your groups, decide which you would include under *media* and which under *the media* and why.

- | | | |
|--------------|--------------|-----------------------|
| a books | h cinema | o acting |
| b speech | i clothes | p magazines |
| c telephones | j hair | q interior decoration |
| d dancing | k stone | r radio |
| e gardens | l television | s CDs |
| f newspapers | m gestures | t photographs |
| g video | n records | u audio tapes |

3. Make up English-Russian pairs of the words and word-combinations equivalent in meaning:

- | | |
|-----------------------|---------------------------|
| 1 advantage | a кругозор (точка зрения) |
| 2 advertisement | b воздействие |
| 3 chore [tʃɔ:] | c преимущество |
| 4 domestic news items | d реклама |
| 5 entertainment | e касаться |

6	impact	f	актуальный (животрепещущий) вопрос
7	outlook	g	работа по дому
8	overhead costs	h	привлекать внимание (кого-либо) к чему-либо
9	reasonable	i	местные новостные сообщения
10	rushed	j	приложение (к периодическому изданию)
11	supplement	k	накладные расходы
12	to broaden	l	влиять
13	to do harm	m	благоразумный
14	to draw smb's attention to smth.	n	насилие
15	to influence	o	расширять
16	to share	p	развлечение
17	to touch upon (on)	q	причинять вред
18	topical issue	r	на скорую руку
19	violence	s	(по)делить(ся).

4. Match the definitions below with the words in the list.

1	celebrity	a	view held as probable
2	circulation	b	belonging to the present time; of the present day
3	commercial	c	to pay regularly in order to receive a magazine, newspaper, etc.
4	coverage	d	a part of a newspaper (supposed to be written by the editor) giving an opinion on some question of day (rather than news)
5	current	e	periodical publication with articles on current events, new books, art, etc.
6	documentary	f	to express; give an idea of
7	editor	g	the way in which a particular piece of news or event is reported
8	editorial	h	an advertisement on television or radio
9	event	i	the title of a newspaper report printed in large letters
10	headline	j	a continuing story about a group of people that is regularly on television
11	opinion	k	the number of copies a newspaper sells each day
12	periodical	l	a film that gives facts and information about a subject
13	reflect	m	a well-known person on television, film or in the press
14	review	n	a magazine about one topic, that appears once a month, three times a year, etc.
15	soap	o	the person who decides what goes in a newspaper or magazine
16	subscribe	p	thing that happens (usu. important)

5. Complete the collocates below by matching a noun from A with a noun from B. Some can combine with more than one noun.

Example:

television channel, report, commentator, programme...

A	action	light	B	affairs	programmer
	cable	live		break	recorder
	celebrity	nature		broadcast	replay
	chat	news		channel	report
	children's	press		commentator	show
	commercial	radio		conference	station
	current	soap		entertainment	television
	digital	sports		guest	viewer
	educational	television		listener	
	game	video		opera	

6. Underline the correct word A, B, C or D to fill the gaps.

The Info-Revolution

We have all seen an enormous increase in the role of the mass 1__ in people's lives. First of all the growth of the 2__ of both serious and 3__ newspapers, has been tremendous. Public 4__ is influenced by powerful 5__ who not only own our newspapers which often have a 6__ of millions, but who also own television and radio 7__ in many different countries. The huge quantity of 8__ that people have to deal with has rocketed with the advent of satellite and cable television. At the same time, more and more people have 9__ to 10__ computers. Information available at home via Internet is infinite.

- | | | | | | | | | |
|----|---|----------------|---|-----------|---|-------------|---|-------------|
| 1 | A | messages | B | medium | C | mediums | D | media |
| 2. | A | printing | B | press | C | interest | D | information |
| 3 | A | cheap | B | people | C | popular | D | public |
| 4 | A | opinion | B | health | C | views | D | services |
| 5 | A | managers | B | writers | C | celebrities | D | editors |
| 6 | A | profit | B | readers | C | circulation | D | popularity |
| 7 | A | networks | B | users | C | sets | D | ports |
| 8 | A | correspondence | B | details | C | information | D | reporters |
| 9 | A | control | B | ownership | C | contact | D | access |
| 10 | A | electronic | B | personal | C | large | D | Rom |

7. Give all possible derivatives of the following words:

effect, to cover, regular, to inform, to publish, to comment, to subscribe, science, to educate, to know, to differ, art, advantage, to violate, crime, convenient, to compose, to connect, possible, broad.

SECTION II

Speaking

1. Agree with the statements of your partner.

Example:

— *Each news medium may report the same news, but the words, the images and their effects on the news consumer are different.*

— *Yes, you are quite right. The effects of mass media on the consumer may differ considerably.*

- 1 You subscribe to quality papers, don't you?
- 2 You prefer to read newspapers rather than watch TV. Is it true?
- 3 The editorial usually deals with the topical issue of day. Am I right?
- 4 Entertainment programmes on TV help people to relieve stress and worry of the day. Do you agree with that?
- 5 Young viewers should be protected from harmful influence of violence, crime shown on TV. What do you think of this?
- 6 Newspaper sales have been falling steadily over the last several decades. Am I right?
- 7 The market is showing some evidence of saturation. There is a feeling among readers that the papers are all the same. Are you of the same opinion?
- 8 I think scenes of violence on TV must be banned. Do you think so too?

2. Disagree with the statements of your partner.

Example:

— *The impact of mass media on people's opinion is negligible.*

— *I'm afraid you are mistaken. Mass media influence on people is stronger today than at any other time in history.*

- 1 The Internet had its origin in Russia. Am I right ?
- 2 Books are often called a mirror of current events. What do you think of it?
- 3 The editorial usually deals with the minor issue of the day. Is it so?
- 4 A journalist is someone who sells newspapers, isn't he?
- 5 A correspondent is a person who owns a TV channel. Is this right?
- 6 Educational programmes on TV are meant to entertain people after a hard day's work. Do you think that it is general opinion?
- 7 A celebrity is someone who is not known to many people. Is this right?

3. Agree or disagree with the following statements. Give your arguments to support your viewpoint.

Example:

— *I know you like to watch TV.*

— *Yes, you are right. Besides, I also like to read quality newspapers.*

— *No, I see you are misinformed. Watching TV is not my hobby. I think it's a waste of time.*

- 1 Television, and to some extent radio, have one or two individuals who present the news.
- 2 Television news commentators are often highly paid celebrities.
- 3 Television cannot present a strong visual image.
- 4 A listener or a viewer can go back and check what was said or find the text of the news broadcast at a public library.
- 5 Contemporary society is too complex to function only through direct communication between one individual to another.
- 6 Communication is not a necessity for survival.
- 7 Internet will substitute all other means of communication.
- 8 Only young viewers like watching serials.
- 9 Popular papers are small and quality papers are big.

4. Answer the questions below.

Example:

- *I'm a keen reader of quality papers. And what about you?*
- *I like to read all sorts of papers, both quality papers and popular ones. Besides, I like to read different magazines too.*

- 1 I regularly subscribe to newspapers. And what about you?
- 2 For my family members TV news is the evening network news. And what about your family members?
- 3 I often listen to radio news when I drive to work. And you?
- 4 I don't let my younger brother watch violent films on TV. And do you do the same?
- 5 I think radio is a source of pleasure and entertainment. What do you think of it?
- 6 They say the Internet will have a dramatic impact on all aspects of our life. What's your idea of this?

5. Paired practice. Read the following statements aloud. Let your partner respond by expressing thanks. Change the roles as you go. Use the patterns below.

Thank you very much; many thanks; thanks a lot; thank you for the pleasure; that's very kind of you; you are very obliging; I'm very grateful to you.

- 1 Your article in the local newspaper is a great success with the readers.
- 2 I can help you with the broadcasting of your commercial on TV.
- 3 Your report on ecological problems has made a great impression on the editor-in-chief of a very important quality paper. He wants to publish it.
- 4 The BBC is going to invite you to work on probation. Are you pleased to accept the invitation?
- 5 Your article is accepted for publication in Readers Digest.
- 6 You have asked for an interview with the editor-in-chief of The Telegraph. He will receive you next Friday.
- 7 Your TV set has been repaired. Now you can watch the Olympic Games broadcasting.

6. Make-up questions to which the following phrases are the answers. The dialogue is between a newspaper correspondent and the editor-in-chief of the newspaper he works for.

The editor-in-chief: ___?

The correspondent: Yes, I did. I refused to have my article published in the "tabloid". The theme is too important to be published in popular papers.

The editor in-chief: ___?

The correspondent: Yes, of course. I'm sure my article will certainly have an important effect on public opinion.

The editor in-chief: ___?

The correspondent: Sure I know. I realize that running a newspaper is an expensive and competitive business. And only reliable sources should be used not to subvert the information.

7. Read the following dialogues in parts and then act them out using modifications.

Dialogue 1

Mike: Hello, Andrew!

Andrew: Hi, Mike! What's up?

Mike: I've got some terrific news. I'm leaving for the U.S.A. I've got a job there.

Andrew: What kind of job is it?

Mike: Well, actually I'm going to work on probation first. But guess what newspaper is ready to take me?!

Andrew: Well, could it be some quality newspaper?

Mike: Well, it's really so. This is The Washington Post. It enjoys the biggest circulation among American newspapers. The best reporters work there. They publish articles for the readers from all walks of life.

Andrew: Is it a daily or a weekly?

Mike: It's a daily newspaper. As far as I know it's policy is to nurture diversity, stimulate and support creativity, encourage active participation and interaction in community and political life.

Andrew: I think all newspapers must bear in mind what role the media should play in the society.

Mike: Right you are.

Dialogue 2

Olga: Mary, do you often watch TV?

Well, I suppose that I watch some television most days. My television watching tends to happen late at night for sort of domestic reasons and work resources, so it's restricted by that.

- Olga: What programmes are your favourite? Do you watch news programmes?
- Mary: Actually I watch a lot of news programmes. I nearly always watch the news, or current affairs programmes. I'm quite a sports fan as well, so if there is any sport on I tend to watch it: cricket or football, or something like that, if I've got nothing better to do.
- Olga: When is television on in your family?
- Mary: It's on in the late afternoon and late at night. But I know that in some homes the television goes on as a kind of background and people don't actually watch it in any kind of concentrated way.
- Olga: Well, I believe some people don't realize that some TV programmes are a great danger, especially to children.
- Mary: You are right in a way, but I think television can be a great benefit to children too. I think there are a lot of good programmes that give them good educational information. And I also think television's good for introducing children to good literature. There are often good children's stories which are dramatized for television.
- Olga: Well, I can't but agree with you that television can be both good and evil. One should only be reasonable in the choice of programmes.
- Mary: Right you are.

Dialogue 3

- Julia: What is the most dangerous thing for children on television?
- Anna: In my opinion it is the commercialism. Some programmes are a part of big marketing exercise. There is a tremendous pressure on children to go out and buy so many things advertised in the programmes and I think that is a very dangerous thing indeed.
- Julia: Any other danger?
- Anna: The other dangerous thing I think, for children is if the television is on indiscriminately and the children get to see programmes not suitable for them. And I think that is a big danger. But that's up to the parents to make sure that that doesn't happen, I think.
- Julia: What would be a reasonable time to watch television?
- Anna: I think the important thing is not how much you watch but how selective you are.
- Julia: Actually, I'm of the same opinion.

8. Make up a short dialogue to the following situation:

You meet your friend who is a TV correspondent. You discuss with him/her the positive and negative effects of television on people, especially on children.

9. Read the text below to find the answers to the following questions:

- a Why is the press often called a mirror of current events?
- b Is television good or evil?
- c What are the advantages of radio over other mass media?

- d What is a specific feature of the Internet compared to traditional broadcasting media?

Mass Media

Mass media play a very important role in reflecting the life of society and building opinions. There are different kinds of mass media: press, television, radio, posters, advertisements, etc. All of them do much to excite an interest in every aspect of the country's life. They draw the public's attention to the most serious political, economic, social and ecological problems. They help to develop a broader understanding of the present-day world around us, to form our outlook. So as mass media actually raise the most vital problems, the effectiveness of their influence on the people is great. They keep people informed on all topical issues of the day.

1. Take the press, for example. It is often called a mirror of current events. It includes newspapers and magazines. Public life, rich in interesting and important events, receives full coverage on the pages of our newspapers. The educational role of the press is extremely great. If you are a regular reader of the press, you'll be well-informed in all questions. There are magazines and newspapers for almost every trade, profession, sport, hobby or interest. The editorial usually deals with the topical issue of the day: important international and domestic news items. Different newspaper columns publish material on many different subjects including brief reviews of current events, critical comments on social life, interviews given by famous people. Some newspapers and magazines carry supplements, which are very helpful for readers. In our country there are dailies, weeklies, monthlies. Many big cities have evening papers which give the latest news. People can subscribe to as many papers as they like. As for me, I subscribe to The Computer News. It's a weekly for specialists and entrepreneurs. In Britain such newspapers are called quality newspapers, because they are serious and cover news thoughtfully. In The Computer News you can find all the necessary information on computer world: new discoveries and inventions, network, software, hardware, interesting and entertaining facts, advertisements. The paper has a supplement, which contains information about the computer market: prices, sellers, types of computers and peripherals on sale.

2. TV has stronger effect on people than any other kind of mass media. In my opinion TV is a great force in the world. We get a great amount of information by watching documentaries, science programmes, discussions, interviews, news commentaries. It gives wonderful possibilities for education. Educational programmes enrich our intellect, broaden our outlook, help us to deepen our knowledge in different subjects. We become more cultured people by learning more. No doubt the entertainment value of TV is great too. All entertainment programmes gather big audiences helping people to relax after a hard day's work. But TV has some disadvantages too. Sometimes we become slaves of TV, devoting too much time to it instead of visiting cinemas and theatres, developing hobbies, belonging to clubs, reading books, meeting our friends. It prevents us from communicating with each other and we begin to forget the art of conversation. A lot of violence, sex,

crime is shown on TV nowadays which does much harm especially to young viewers. Besides television may lead to poor health through rushed meals, lack of exercise, eyestrain. TV viewers should take into consideration advantages and disadvantages of TV and be reasonable. And those who are responsible for TV output should set high enough ethical and cultural standards in programme-making.

3. Posters are often used as means of propaganda. They can be a vivid commentary on different events. They may be political, travel, advertising, etc. As many other kinds of mass media they touch on different spheres of our life.

4. Radio is also a very important mass medium. We can't imagine our living without radio. Radio offers us a wide range of programmes. You may choose any radio programmes to your taste. For the most up-to-the-minute, quickest news, no medium currently does better than radio. Radio serves the nation more as the headline service. Many radio news broadcasts are what is called "rip and read". Radio news today functions best as a first alert for important news and as the best source for recent weather information. Informative and educational value of radio programmes is evident too, besides radio is a source of pleasure and entertainment. Moreover it is a very convenient mass medium, because you can listen to the radio doing all kinds of household chores simultaneously (at the same time).

5. The Internet is a computer-based worldwide information network. The Internet is composed of a large number of smaller interconnected networks called internets. These internets may connect tens, hundreds, or thousands of computers, enabling them to share information with each other and to share various resources, such as powerful supercomputers and databases of information. The Internet has made it possible for people all over the world to effectively and inexpensively communicate with each other. Unlike traditional broadcasting media, such as radio and television, the Internet is a decentralized system. Each connected individual can communicate with anyone else on the Internet, can publish ideas, and can sell products with a minimum overhead cost. In the future, the Internet may have a dramatic impact on higher education and business as more universities offer courses and more companies offer goods and services online.

10. Go back to passage 1. Look it through and comment on the sentence: "The educational role of press is extremely great". Prove your opinion by examples from your own experience.

11. Scan passage 2. Pay attention to the positive and negative features of television. Discuss them with your partner. Use the following word combinations in your discussion:

- a Admitted the one-eyed monster into our homes; used to have hobbies, to entertain our friends and be entertained by them; used to read books and listen to music; used to go outside for amusements, to theatres, cinemas, restaurants and sporting events; grow addicted to the telly; watch rubbishy commercials or spectacles of sadism and violence; encourage passive enjoyment; cut off from the real world.
- b Nobody imposes TV on you; enjoy civilized pleasures; watch to be well informed;

considerable variety of programmes; cheap source of information and entertainment; enormous possibilities for education; language teaching; ideals of democracy, political argument, etc...; world net communication via satellite; unifying force of the world.

12. Look through passage 4 and decide what the phrase “rip and read” means:

- a** the announcer reads paper news reports for some five minutes;
- b** he gives detailed analysis of the events.

13. Scan passage 5 and discuss with your partner all possible uses of the Internet. Speak about the role of the Internet in your life.

14. Learn and set out the dialogue. Make your own dialogue on the subject.

- A: Where from do you learn about what happens in your country and abroad?
B: From TV and newspapers. I enjoy watching the news, documentaries, nature programmes, cartoons, variety shows.
A: Which channel do you watch most?
B: Well, actually it is The Discovery, but I watch other channels too.
A: What do you think of foreign films and television programmes?
B: Some, of them are quite enjoyable, but I’m not keen on foreign soaps. They are not really my kind of thing, I’m afraid. And it’s a mystery to me why soap opera is so popular?
A: Well, some people argue that the key is that soaps deal with feelings first, ideas and actions second. And it’s a matter of choice. For example, it is accepted that men have good reasons to watch hours of football on TV – they are sports fans. Soap opera viewers are stereotyped as soap addicts.
B: I agree that everyone has the right to choose – football or soap. They say: “Tastes differ”.
A: You are probably right.

15. Use the following situations to start a short talk:

- a** The editor-in-chief of the newspaper you work for has looked through the article you wrote for the paper and is now making critical remarks. His opinion is that the coverage of the event in your article is not objective and biased (предвзято). Give reasons to defend your opinion.
- b** Television, newspapers, magazines and other media pay too much attention to the personal lives of famous people such as public figures and celebrities. Use special reasons and details to explain your opinion.

16. Think of a situation where the following proverb can be used: “No news is good news”. Discuss it with your partner.

SECTION III.

Reading.

1. Starter activity

Before you read the text below say what British newspapers you know. Which of these can be considered quality newspapers: The Financial Times, The Daily Express, The Daily Mirror, The Times, The Guardian, The Daily Mail, The Daily Telegraph. Do you think newspapers in Britain are owned by the government? Read the text and check your answers.

Press in Britain

Probably in no other country are there such great differences between the various national daily newspapers – in the type of news they report and the way they report it.

On the one hand, there are the quality newspapers: The Times, The Independent, The Guardian, The Financial Times and The Daily Telegraph. Quality newspapers are serious national daily newspapers, appealing mainly to the upper and middle classes. They concern themselves mainly with factual reports of major national and international events, with the world of politics and business and with arts and sport. The Daily Telegraph, for example, contains reports on national and international news, gives a full coverage of sports and other topics. The Financial Times is read mainly by professional and business people as it contains coverage of industry, commerce and public affairs. The Guardian gives a wide coverage of news events and reports on social issues, the arts, education, etc. The Times is the most famous newspaper. It is not actually the oldest newspaper in Britain, but some years ago it celebrated its two hundredth birthday. The Times represents the views of the establishment and is well-known for its correspondence column.

On the other hand, there are the populars and tabloids, so-called because of their smaller size. The tabloids – the most widely read of which are The Daily Mail, The Daily Express, The Daily Mirror, The Sun and The Daily Star – concentrate on more emotive reporting of stories often featuring sex, violence, the Royal family, film and pop stars, and sport. The popular press aims to entertain its readers rather than inform them.

In some countries, newspapers are owned by government or by political parties. This is not the case in Britain. Newspapers here are mostly owned by individuals or by publishing companies, and the editors of the papers are usually allowed considerable freedom of expression. This is not to say that newspapers are without political bias. Papers like The Daily Telegraph, The Daily Express and The Sun, for example, usually reflect conservative opinions in their comment and reporting, while The Daily Mirror and The Guardian have a more left-wing bias.

In addition to the 12 national daily newspapers there are eleven national papers which are published on Sundays. Most of the “Sundays” contain more reading matter than daily papers, and several of them also include colour supplements – separate colour

magazines which contain photographically-illustrated feature articles. Reading a Sunday paper, like having a big Sunday lunch, is an important tradition in many British households. Besides, nearly every area in Britain has one or more local newspapers. They give national but mostly local news. These are often evening newspapers, which people can buy in the afternoon or in the early evening on their way home from work.

There are magazines for all kinds of groups of people and for every type of hobby you can imagine, yet the British have nothing quite like many “news magazines”, serious and popular, that are, for example, on the German market. Information and articles of the type you would find in these “news magazines” appear in Britain in the national daily and Sunday newspapers.

The British are one of the biggest newspaper-reading nations in the world.

2. Read the text “TV and Radio” and look for the answers to the following questions:

- a Who controls broadcasting in the United Kingdom?
- b How many radio stations are there in Great Britain?
- c What TV channels are controlled by the BBC?
- d What is the IBA responsible for?
- e What is Breakfast TV?
- f What is Open University (“university of the air”)?

TV and Radio

Watching television is one of the great British pastimes! Broadcasting in the United Kingdom is controlled by the British Broadcasting Corporation (BBC) and the Independent Broadcasting Authority (IBA). The BBC receives its income from the government, but the private companies controlled by the IBA earn money from advertising.

National radio is controlled by the BBC, and listeners can choose between four stations. Radio 1 is a pop-music station with news and magazine-style programmes. Radio 2 plays light music and reports on sport. Radio 3 plays classical music whilst Radio 4 has news programmes, drama and general interest programmes. There are many local stations, some private and some run by the BBC. Their programmes consist mainly of music and local news.

The BBC has two TV channels. BBC 2 has more serious programmes and news features. The IBA is responsible for looking after the regional independent TV companies who broadcast their own programmes and those they have bought from other regions. There is a break for advertisements about every 15-20 minutes. The most recent independent channel is called Channel 4 and it has more specialized programmes than the main channels. All these channels are basically national, with just a few regional programmes, for example extra news programmes.

Breakfast TV (magazine programmes on BBC and ITV, giving news and interviews from approximately 6 a. m. to 8.30 a. m.) is very popular.

In general, people think the programmes offered on British television are of a very high standard. Some people, however, are becoming worried about the amount of violence on TV, and the effect this may have on young people. TV and radio are also two of the main teaching channels used by the Open University. This 'university of the air' allows many thousands of students to study at home for degrees they never would have obtained in the main educational system. They also have to do without sleep as most of their programmes are broadcast early in the morning or late at night!

New technology has made it possible for viewers to receive many more programmes into their homes through satellite TV. The 1990s saw many changes in British TV and radio.

3. Read the text “American mass media”. Try to understand it and then do the tasks that follow.

American Mass Media

By Yuri Stulov

One of the central principles of American society is the right to know, and the main function of the media is to communicate to society what its members do, feel and think. Therefore the media must be free to discuss whatever they think is important for the public welfare. At the same time they must be responsible for what they print and broadcast and be fair, accurate and objective in their coverage of events. Journalism requires intelligence, knowledge, experience and powers of observation and reasoning.

A free press is one of the greatest achievements of democratic society. Freedom of the press is protected by the Bill of Rights, and the First Amendment to the U.S. Constitution which runs that "Congress shall make no law ...abridging the freedom of speech, or of the press." Ever since, the First Amendment has served to guarantee the rights of all Americans who reported news, who wished to make their opinions public, and who desired to influence public opinion. At the same time there are laws against libel and invasion of privacy, as well as limits on what reporters may do in order to get a story.

In the early days of the new country the media meant newspapers, pamphlets and books. Today "the press" denotes any news operation in any media, which also include television, radio, the Internet, films, and cable television, which are now known as the "news media".

Technological progress has speeded up the way information is gathered and brought to people's homes. It took six months for the people in Europe to learn about Columbus' discovery of the New World. When Yuri Gagarin was launched into space or when American astronauts made their first landing on the moon live radio and television broadcasts transmitted within seconds these historic events into millions of homes all over the world. Thanks to modern technologies, the time lag between the occurrence of an event and the news of it reaching the public has been minimized.

Computers have revolutionized the way information is processed and distributed. People are surrounded by information all day long. A look at the local

newspaper, a glimpse of breakfast show on TV, a bit of reports on the car radio on the way to work, a major evening news programme on TV, a talk show and Hollywood blockbuster later in the evening are the essential part of daily activities of an average American. News and entertainment that are beamed from one end of the American continent to another help to level out regional differences and bring the American people a common and shared experience.

Newspapers are the oldest of the news media in the USA. They have always been highly political. America's free-press traditions go back to the early 1700s when the first political battles for the independence of the American colonies were fought in the pages of newspapers and pamphlets. Ever since, newspapers have been expected to take political stands, though it is essential that factual news be reported honestly and objectively. From the very start American journalism set the standard for generations of publishers and reporters. Newspapers greatly contributed to teaching great masses of new immigrants the American way of life.

Approximately half of all daily newspapers classify themselves as independent. One of the canons of American journalism is that the press must be free of any ties, except the public interest, i.e. it must not be obliged to promote private or selfish interests, nor must it print editorials that knowingly subvert the truth. Competition for circulation and profits was always tough and the rivalry of two publishers – Joseph Pulitzer and Randolph Hearst – created some of the most important press standards. Pulitzer's newspapers fought corporate greed and government corruption, introduced sports coverage and comics and entertained the public with an endless series of promotional stunts. Hearst's brand of outrageous sensationalism was dubbed "yellow journalism". Both symbolized an era of highly personal journalism.

Today's standards are objective, unbiased reporting with all sides of a story represented. The New York Times and The Washington Post as well as The Los Angeles Times, The Boston Globe and The Christian Science Monitors are the most important daily newspapers that shape public opinion. They focus on major national and international events and are known for their responsibility, independence, impartiality and fair play and in this way differ from supermarket tabloids which carry little hard news and lay stress on celebrities, human interest stories about children and pets, and diet and health tips. An example of a tabloid is The National Inquirer with a circulation of over 4,000,000.

Nevertheless, the circulation of newspapers is shrinking because of the growing popularity of television. 65% of Americans use television as their primary source of news because it can report the news immediately with a picture of it. As a result, newspapers now concentrate on features, personality profiles and in-depth news analysis rather than fast-breaking headline stories.

Radio began to spread throughout the United States in 1920s, and by 1928 the USA had three national radio networks – two owned by NBC (the National Broadcasting Company) and one by CBS (the Columbia Broadcasting System). Though mostly listened to for entertainment, radio's instant, on-the-spot reports of dramatic events drew huge audiences throughout the 1930s and WW II. Radio introduced government into the media. Congress gave the government power to

regulate and license broadcasters so that radio and – from the 1940s – television could be operated in the public interest.

Television made its first public appearance just before the outbreak of WW II but it gained real importance a few years after the end of it. Watching TV became a social ritual with millions of people setting up their lifestyles around TV's programme schedule. The television networks followed the newscasting procedures that had been established for radio. By its nature, TV has proven most effective in covering dramatic, action-filled events when TV viewers become direct witnesses of these events. Television became a very important influence on the political scene, especially during presidential elections. In 1960 Richard M. Nixon and John F. Kennedy participated in several television debates, and many observers believe that JFK won the election in large part because of the favourable impression he created in those television appearances. Presidents now frequently deliver major speeches to television audiences. Many presidential press conferences are televised "live".

Unlike newspapers, radio and television are traditionally neutral in politics. Network representatives insist that the news and public issues be presented objectively, without offending listeners. The Federal Communications Commission permits editorializing but requires radio and television stations to present all sides of a controversial issue and to offer political opponents equal amounts of time to present their opinions.

Basically, however, television is an entertainment medium. The advertiser buys commercials on the shows that attract the largest audiences, which include talk shows with well-known celebrities, westerns, sitcoms, movies, spy shows, quiz shows, and soap operas. On most quiz shows members of the audience are asked questions, and if they give the correct answers they receive valuable prizes. Commercial television is totally financed by advertising.

Non-commercial or public television emphasizes cultural, informational, and educational programmes, approximately one-third of public television's prime time programmes are devoted to news and public affairs. Financial support for public broadcasting comes from listeners' contributions, foundations, and federal, state, and local governments. The Public Broadcasting Service (PBS) is a government-sponsored service that plans and distributes programmes to non-commercial TV stations.

Technology continues to change the media. Cables and satellites are expanding television. Already half of American homes subscribe to cable TV, which broadcast dozens of channels providing information and entertainment of every kind.

Today over 95% of all American homes have TV sets and 50% have two or more sets. Surveys show that in the average American household the television is watched 7 hours a day. It has changed the Americans' view of the world in which they live, as well as their lives at home.

Despite enjoying a period of unsurpassed wealth and influence, the American media is troubled by growing public dissatisfaction. Experts say that the ownership of the news media is being concentrated in fewer and fewer hands and that chains-companies that own two or more newspapers, broadcast stations and other media

outlets — are growing larger. Critics complain that journalists are always emphasizing the negative, the sensational, and the abnormal rather than the normal. There is a feeling that the press sometimes goes too far, crossing the fine line between the public's right to know and the right of individuals to privacy and the right of the government to protect the national security. In many cases the courts decide when the press has overstepped the bounds of its rights.

"Knowledge will forever govern ignorance", said President James Madison. "And a people who mean to be their own governors must arm themselves with the power knowledge gives". Mass media help us to acquire this kind of power.

Glossary

libel	['laɪbl]	(письменная) клевета
lag	[lɪg]	отставание, запаздывание
subvert	[sʌb'vɜ:t]	извращать, развращать
greed	[gri:d]	жадность, алчность
dub	[dʌb]	(шутл.) давать прозвище, окрестить
unbiased	[An'baɪqst]	непредубежденный, беспристрастный
editorialize	['edɪ'tɔ:riqlaɪz]	тенденциозно излагать сообщения
celebrities	[sq'lebrɪtɪz]	знаменитости, известные люди
quiz show	['kwɪz sqʌ]	телевикторина
unsurpassed	['Ansq'pɔ:st]	непревзойденный

Comprehension check

1. Define the statements as true or false. Underline the phrases in the text that support your answer.

- a An average American is interested mainly in Hollywood blockbusters and TV talk shows.
- b Some of the most important press standards in America were created in tough rivalry of the two publishers.
- c Tabloids focus on major national and international events, on unbiased information.
- d The primary source of news for Americans remains the press.
- e Radio drew the attention of huge audiences owing to on-the-spot reports of dramatic events in the 30-s and 40-s.
- f Television first appeared after the end of World War II.
- g The influence of television in the political scene during presidential elections can't be overestimated.
- h News and public affairs constitute a considerable amount of public television's prime time programmes.
- i Americans tend to be dissatisfied with the journalists looking for and emphasizing the negative, the sensational events.
- j Mass media help us to arm ourselves with the power knowledge gives.

2. Complete the following:

- a In the early days of the new country the media meant ___.
- b Newspapers are the oldest ___.
- c In spite of taking political stands it is essential for newspapers that ___.
- d “Yellow journalism” is ___.
- e Important daily newspapers focus on ___.
- f Radio began to spread throughout the United States in ___.
- g TV is most effective in covering ___.
- h Basically television is ___.
- i Commercial television is ___.
- j Public (non-commercial) television emphasizes ___.
- k Technology continues ___.
- l Critics complain that ___.
- m About half of American homes subscribe to ___.

3. Find the passages in the text about:

- a the role of technological progress in gathering and bringing information to people’s homes;
- b the requirements to American press in the early 1700-s and since;
- c canons of American journalism;
- d today’s standards of American press;
- e the reason for the shrinkage of newspapers circulation;
- f the effectiveness of TV in covering dramatic, action-filled events;
- g the reasons for public dissatisfaction with American media;
- h the violation of the right of individuals to privacy by the media.

4. Answer the following questions about the text:

- a What did the media mean in the early days of America?
- b What were the principles used by the two rival publishers – Joseph Pulitzer and William Randolph Hearst in their coverage of American and world events?
- c What important daily newspapers shape public opinion? What do they focus on?
- d What is the reason for the shrinkage of the circulation of newspapers?
- e Who empowered the government to regulate and license broadcast stations?
- f Why did TV become popular with the audience compared to radio? What are the advantages of TV over radio?
- g What is traditionally neutral in politics – radio and television or newspapers?
- h What television is financed by advertising?
- i What does public television emphasize?
- j What is PBS?
- k What causes public dissatisfaction with the American media?

Read the text “Television news: words and images” and:

- a find the place where the author gives the explanation what actuality footage is;
- b comment on the dictum (изречение) “One picture is worth a thousand words”.

As its name suggests, news deals with recent events: it strives to be up-to-date. Television news, in particular, aims to record and present events as they happen. This is one very important news value. Live or recent footage of an event itself or from the scene of an event helps TV news to present itself as in step with ‘what is happening now’.

Pictures gathered from the scene of an event are known as actuality footage. Actuality footage not only helps to anchor the news as much as possible in the here and now: it also helps to confirm the authenticity of the accounts which it offers. In other words, it not only shows us ongoing events; it shows them as if we can see them now, directly and for ourselves.

News editors are apt to quote the dictum ‘one picture is worth a thousand words’. However, although television news thrives on pictures, actuality footage is never self-explanatory and is never presented in silence. It always requires commentary. Indeed, the most polished news reports embodying actuality footage display a close fit between actuality and commentary, between words and pictures.

Writing

1. Write a composition in which you state your opinion on ethical questions in journalism. Do you think the line must be drawn between the individual’s right to privacy and the public’s right to know? Prove your opinion by giving scandalous facts of the media covering the private life of celebrities.

- Start with an introductory paragraph.
- State different points of view.
- Use expressions like: Some people believe ... and The media argue that...
- State your point of view. Give your own arguments to support your opinion.

2. Write an article about 150 words of your favourite pastime (watching TV, reading newspapers, books, etc.) Imagine that you are writing this article for your local magazine.

Учебное издание

Шелягова Тамара Григорьевна,
Илюкевич Ираида Игоревна,
Лягушевич Светлана Ивановна и др.

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