

**МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ**  
**ХАРКІВСЬКИЙ НАЦІОНАЛЬНИЙ УНІВЕРСИТЕТ**  
**МІСЬКОГО ГОСПОДАРСТВА імені О. М. БЕКЕТОВА**

**ЗБІРНИК ТЕКСТІВ І ЗАВДАНЬ**

для самостійної роботи

з дисципліни

**«ІНОЗЕМНА МОВА»**

**(АНГЛІЙСЬКА МОВА)**

*(для студентів I курсу заочної форми навчання  
напряму 6.170202 Охорона праці*

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Збірник текстів і завдань рекомендується для організації самостійної роботи студентів першого курсу спеціальності «Охорона праці» заочної форми навчання. Головною метою його є формування навичок читання і розуміння інформації з автентичних англомовних джерел та засвоєння необхідного обсягу лексичного матеріалу, що відповідає вимогам професійно-орієнтованого навчання іноземній мови. Зміст завдань відповідає вимогам навчальних програм, а тематика текстів сприяє розширенню обсягу сучасної англійської науково-технічної лексики. Запропонована інформація необхідна для ефективного виконання професійних обов'язків майбутніх спеціалістів.

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## INTRODUCTION

These educational materials are designed for the students of the 1<sup>st</sup> year of speciality “Occupational safety” to develop their knowledge and skills in English language according to their profession.

The manual is based on the authentic texts. It also has the tasks for reading and translation, lexical tasks, texts for self-study. It has 5 units. Each unit contains:

- authentic texts for reading, translation and discussion in class;
- activities on vocabulary;
- activities on reading comprehension;
- additional texts with tasks.

The manual can be recommended both for using in class and for students’ self-study.

## UNIT 1

### Text 1

#### I. Read and translate the text.

#### HIGHER EDUCATION IN THE UK

Education after 16 is voluntary in United Kingdom. Students, who live in England, Wales and Northern Ireland must take at the age of 16 the examinations for the General certificate of secondary education (GCSE). In Scotland students receive the Scottish Certificate of Education. After this exam students can choose to stay on in school or attend colleges of further education.

British universities are self-governing and are guaranteed academic independence. Funding for education and research is provided by funding councils set up by Parliament. The number of universities jumped in 1992 when polytechnics and some other higher education establishments were given the right to become universities. By the end of 1994, there were some 90 universities, almost half of them former polytechnics, including the Open University.

Many of the colleges of Oxford and Cambridge universities were founded in the 12<sup>th</sup> and 13<sup>th</sup> centuries. All other universities in Britain were founded in the 19<sup>th</sup> and 20<sup>th</sup> centuries. The Open University, based in Milton Keynes, England, was founded in 1969. It uses extension techniques of correspondence courses, television and radio programmes, and videocassettes, supported by local study centres and residential summer schools, to provide higher education opportunities to a wide variety of people.

During the 1960s there was a significant increase in the number of new universities, reflecting a fast growth in student numbers, which was made possible by an expansion in grant facilities. During the 1980s, an expansion in higher education places led to another large jump in student numbers. In the 1992-1993 academic year there were more than 1.4 million students in full-or part-time higher education in Great Britain, compared with just under 850,000 a decade earlier. About one quarter of young people are in higher education in England, Wales, and Scotland; one third in Northern Ireland. About 90 per cent of students get state grants to cover tuition fees and living costs.

The size of the grant is determined by parents' income. Since the late 1980s, however, grants have been frozen; students can apply for a student loan.

#### Vocabulary:

voluntary	добровільне
attend	відвідувати
self-governing	самоврядний
funding	фінансування
significant	важливий

to set up  
extension techniques

to reflect  
parents income  
student loan

засновувати  
технології для дистанційної  
освіти  
відбивати, відображувати  
дохід батьків  
студентська позика

## **II. Answer the questions:**

1. When do students take the examinations for the General Certificate of Secondary Education?
2. What opportunities do students have after this exam?
3. Why did the number of universities in the UK jump in 1992?
4. When was the Open University founded?
5. What techniques does the Open University use?
6. Was there a significant increase in the number of new universities during the 1960s? Why?
7. What determines the size of the grant?

## **III. Translate into English:**

1. У віці 16 років кожен житель Сполученого Королівства зобов'язаний скласти іспити, щоб отримати сертифікат середньої освіти.
2. Просунутий рівень іспитів є необхідною вимогою щодо вступу до університету.
3. Британські університети є повністю самоврядуваними.
4. У 1992 році Політехнічним інститутам було надано право стати університетами.
5. Відкритий університет, широко відомий своїми дистанційними технологіями навчання, був заснован у 1969 році.
6. У 60-х роках у Великобританії спостерігається значне збільшення кількості університетів.
7. Розмір гранту навчання визначається на основі доходу батьків.

## **IV. Questions for discussion:**

1. Do you think that higher education should be free? Do you think that the quality of education in private universities and institutes is better because professors and teachers are paid more?
2. Do you think that the paid higher education with a system of grants is better than entry exams?

## Text 2

### I. Read and translate the text.

#### FOREIGN LANGUAGES

Knowledge of foreign languages is especially important today because they are the main and the most efficient means of information exchange between the people of our planet. Students should learn English as a foreign language because today English is the language of the world. Over 350 million people speak it as a mother tongue. The native speakers of English live in Great Britain, in the United States of America, Australia and New Zealand. English is one of the official languages in the Irish Republic, Canada and South African Republic. As a second language it is used in the former British and US colonies.

It is the major international language for communication in such areas as science, technology, business and mass media. English is used as one of the official languages of the United Nations Organization and other political organizations. It is the language of computer software, literature, education, modern music and international tourism.

Learning a foreign language is not an easy thing. It is a long and slow process that takes a lot of time and patience. But every educated person, every good specialist has to know English because it is absolutely necessary nowadays.

It is well known that reading books and magazines in the original, watching films and talking with the native speakers helps a lot. When learning a foreign language you learn the culture and history of the country where this language is spoken.

### II. Find Ukrainian equivalents

exchange

patience

software

native speakers

mass media

### III. Answer the questions:

1. Why do we need to learn foreign languages?
2. How many people in the world speak English?
3. What English-speaking countries do you know?
4. In what areas is English mostly used?
5. What are the main difficulties for you in learning foreign languages?

## UNIT 2

### Text 1

#### I. Read and translate the text

In fact the beginning of civilization and the beginning of engineering *are coincident*. Down through the ages, the engineer has been in the *forefront* as a *maker of history*. His *material accomplishments* have had as much *impact* on world history as any political, economic or social *developments*.

Basically, the role of engineer has not changed through the centuries. His job is to take knowledge and make practical use of it. He *converts* scientific theory into useful application, and *in so doing*, he *provides* for man's material needs and well-being.

Outstanding characteristics of engineers through the centuries have been a *willingness* to work and an intellectual *curiosity* about the *behaviour* of things. Their *queries* about Why?, How?, With what?, At What Cost? have all served to *stimulate* an effort to find desirable answers to many types of technological problems.

Another characteristic associated with engineers is the ability to see *ahead*. The engineer must have a *fertile imagination*, must be *creative*, and must be ready to accept new ideas. *Whether* an engineer lived at the time of construction of pyramids or has only recently graduated in nuclear engineering, these characteristics have been an important part of his *intellectual make up*.

#### II. Identify which of the following sentences refer to the content of the text.

1. Civilization and engineering belong to different periods of time.
2. Outstanding engineers have always been among those people who determined the course of history.
3. Engineers use information and knowledge to invent devices helping to make our life easier.
4. Asking a lot of questions does not help solving technological problems.
5. Curiosity, creative imagination and desire to work in engineers stimulate technology development.

#### III. Give Ukrainian equivalents to the following words and expressions:

1. are coincident
2. forefront
3. a maker of history
4. material accomplishments
5. impact
6. developments
7. to convert
8. in so doing
9. to provide
10. willingness
11. curiosity



12. behaviour
13. queries
14. to stimulate
15. ahead
16. a fertile imagination
17. creative
18. whether
19. intellectual make up

#### **IV. Answer the questions:**

1. What is the role of engineers in the history of mankind?
2. What characteristics should an individual possess to become a good engineer?

V. Identify grammar tenses of the verbs in the underlined sentences.

- 1) .....
- 2) .....
- 3) .....
- 4) .....
- 5) .....
- 6) .....
- 7) .....
- 8) .....
- 9) .....
- 10) .....

### **Text 2**

#### **I. Read and translate the text.**

##### **PROBLEM SOLVING**

Have you ever had a problem that you wanted to solve but you didn't know where to start? Many people give up before they even try. If you have steps to follow in trying to solve a problem, getting an answer will be easier. A step-by-step plan for solving problems is called a problem – solving strategy. Once you learn a problem – solving strategy, you can use it to solve all kinds of problems. If you really learn how to use it, it will help you throughout life.

All problem – solving strategies have some common parts. Usually, the first step in solving a problem is being able to say, or state, exactly what the problem is in your own words. The definition of the problem is sometimes called the problem statement.

A more detailed problem statement is called a design brief. If the problem statement is not very specific then you might not know when you have found a solution. A design brief gives specific details of the problem. It gives you a lot more information than a problem statement does.

The specific requirements for a problem are called parameters. Parameters might limit the amount of money you can spend to solve the problem, the amount of time, or the kinds of materials you can use.

Once the problem is identified, you need to explore ideas and gather information related to your problem. Ideas can come from many sources. You need to use as many resources as possible. You also need to be sure your information is current. You will find a great deal of information on most topics. You will need to evaluate the information and decide whether or not it is useful in solving your problem.

Now that you have all the ideas, you have to do something with them. You select what you think is the best idea to try first. The fun part is testing your idea or solution. During the test you should review the parameters of the problem, so that you can stay on track. Evaluating what happened during the testing is the most important part of the entire problem – solving strategy.

The chances of your first idea being totally perfect are slim. Just because your idea did not work, it doesn't mean you failed – it just means you learned what doesn't work. You can use the successful parts of your idea along with some changes to create a second idea. You will need to test this new idea and evaluate it too.

## **II. Decide yourself which of these sentences refer to the content of the text:**

1. Many people don't even try to solve a problem.
2. If you don't try to find an answer to the problem at once, but do it step by step instead, success is almost inevitable.
3. The specific requirements for a problem are called parameters.
4. Testing your solution is fun.
5. Once you have all the ideas, you have to select the best one to try it first.
6. A detailed plan for solving a problem is called a problem – solving strategy.
7. The specific details of the problem are given in its detailed definition, which is called a design brief.
8. There must be only one solution to a problem.
9. Your first idea is always the best one.

## **III. Answer the question**

- How many parts and what parts in solving a problem do you know?

## **IV. Make up questions on the text to use them like a plan**

## **V. Give Ukrainian equivalents**

A design brief, throughout life, problem statement, to state what the problem is in your own words, to take measurements, accurate notes, totally perfect, along with, problem solving cycle, final solution, basic research, applied research, electronic circuit, to keep an open mind, to have something in common, to have investigating minds, proven facts.

## **VI. Make up nouns from the verbs.**

to state –  
to research –  
to solve –  
to define –  
to require –  
to explore –  
to identify –  
to review –  
to choose –  
to predict –  
to guess –  
to reason –  
to evaluate –  
to fail –  
to restrict –  
to prove –  
to perfect -

### **Text 3**

#### **I. Read and translate the text. Name the text.**

In the problem solving strategy, you spend a lot of time exploring ideas. Companies are always looking for new ideas, too. That's because every product starts as an idea. Someone may suggest an idea or invent something to solve a particular problem. Many companies have special research and development (R&D) departments. The people who work in R and D look for new ideas, and then they develop them into products. Of course, not every idea works.

Research helps us gather information. There are two kinds of research – basic research and applied research. Basic research is gathering information that helps us understand things about the world around us. Sometimes the information cannot be used right away. For example, people learned how to make a laser in the 1960s, but they did not know what to do with it. Today we use lasers for many things, from supermarket pricing to surgery.

Applied research is the kind of research done to solve a particular problem. The information can be used right away. For example, people wanted to make computers smaller and more portable. To do that they needed to put more components in a smaller space.

Basic and applied researches use the same two methods to get information – retrieving and experimenting. Retrieving is gathering already – known information from sources such as books, people, and computers. The information is part of the knowledge base.

## **II. Give Ukrainian equivalents to the following English words:**

- 1) department
- 2) portable
- 3) basic research
- 4) applied research
- 5) supermarket pricing
- 6) electronic circuit
- 7) to retrieve
- 8) along with
- 9) problem solving cycle
- 10) to keep an open mind

## **III. Decide yourself if the sentences true or false?**

- 1) You don't spend a lot of time exploring ideas, in the problem solving strategy.
- 2) A lot of companies don't have R&D departments.
- 3) Only two out of every five ideas actually work.
- 4) Basic and applied researches use different methods to get information.

## **IV. Answer the questions:**

- 1) What do R and D departments deal with?
- 2) What do we mean by research?
- 3) What kinds of research do you know?
- 4) What methods are used to do research?

## **Text 4**

### **I. Read and translate the text.**

#### **THE SCIENTIFIC METHOD**

The process of scientific problem solving is called the scientific method. The scientific method was developed by the Italian scientist Galileo Galilei and the English philosopher Francis Bacon. This method is used as a general rule and is not strictly followed in its purest form. The five steps of the scientific method are:

1. Recognize the problem.
2. Form a hypothesis (an educated guess) about the correct answer.
3. Make a prediction.
4. Experiment to test your prediction.
5. Make a general rule that will apply, or organize the hypothesis, prediction and results of your experiment.

Scientists and technologists face the same traps in trying to solve problems. Everyone has a set of ideas about how the world works. These ideas often block new ideas or restrict our thinking to one path. Scientists must keep an open mind about their investigations; this is important because their results have to be based on scientific facts. Scientists can't let their results be changed by what they think the results should be. Another important reason for keeping an open mind is that many scientific discoveries happen by accident!

All scientists have a few very important things in common. They have investigating minds, they are willing to perform experiments carefully, they don't let themselves be influenced by anything but proven facts. Their experiments have to be done so that if someone else performs the exact same experiment, he or she will get the same results.

**II. Find in the text English equivalents to the following Ukrainian words:**

чистий -  
 точний -  
 припускати -  
 пастка -  
 набір -  
 обмежувати -  
 шлях -  
 розслідувати -  
 старанний, готовий -  
 доводити -

**III. Fill in the table choosing the suitable form of the word: *noun, verb, adjective, adverb***

To state, statement, to restate, restatement, accurate, accuracy, accurately, to research, research, researcher, to solve, solution, to define, definition, to require, requirement, to explore, exploration, explorer, current, currently, to identify, identification, to review, review, reviewer, to choose, choice, to predict, prediction, to guess, guess, willing, willingness, to reason, reason, reasoning, to evaluate, evaluation, to fail, failure, to restrict, restriction, to prove, proof, perfect, to perfect, perfection.

NOUN	VERB	ADJECTIVE	ADV ERB

**IV. Give Ukrainian equivalents to the following English words and expressions:**

a design brief –  
problem statement –  
to state what the problem is in your own words –  
totally perfect –  
problem solving cycle –  
basic research –  
applied research –  
electronic circuit –  
to keep an open mind –  
by accident –  
to have smth in common –  
to have investigating minds –  
proven facts –  
the same –  
the exact same –  
to block smth –

**V. Complete the following sentences using the words from the box:**

Real-life, idea	to test,	information,	ideas,	problem,
--------------------	----------	--------------	--------	----------

State the (1).....in your own words.  
Explore all .....and.....possible.  
Apply the best.....and.....it. If it doesn't work.  
Retry the.....or change your.....and .....it.  
Hook what you have learned to..... - .....problems.

**VI. Answer the questions:**

- 1) What is scientific method?
- 2) What are the steps of the scientific method?
- 3) Do scientists and technologists face the same traps in trying to solve problems?
- 4) Why must scientists keep an open mind? Give the reasons.

## **UNIT 3**

### **Text 1**

#### **I. Read and translate the text.**

#### **MODERN MEANS OF COMMUNICATION AND ELECTRONIC COMMERCE**

Connecting many computer networks and using common addressing system, the Internet has been growing rapidly since its creation in 1983, radio, telephone and cable television wires, satellites being used to deliver Internet services. By the mid-1990s the Internet linked millions of computers throughout the world and it is sure to be the most important commercial and popular means of communication nowadays. The original uses of the Internet were electronic mail, file transfer, bulletin boards and remote computer access. Having expanded considerably during the 1990s, the World Wide Web enables users easily to examine the Internet sites and now it is likely to have become the leading informational service of the Internet.

The first electronic transactions are supposed to have been handled in the 1950s due to telex, radio-teletype and telephone. In the following decades various industries elaborated upon the system of electronic data interchange before a simple and independent of any particular machine standard was created. Since the mid-1990s electronic commerce has become one of the most rapidly growing retail sectors involving the use of computer telecommunication networks for maintaining business relationships and selling information, services and commodities. Although e-commerce usually refers only to the trading of goods and services over the Internet, it actually includes broader economic activity such as business-to-consumer and business-to-business commerce as well as internal organizational transactions that support these activities.

A large part of e-commerce was transferred to the Internet after the first graphical “browser” software for the access to the World Wide Web had been introduced in 1993 and when the number of companies and individuals using “on-line” had greatly increased.

The further development of secure electronic transfer of sensitive information, such as credit card numbers and electronic funds transfer orders, is certainly to be essential to the continued growth of e-commerce.

Among other innovations that have contributed to the growth of e-commerce are electronic directories and search systems for finding information on the Web; software agents that act autonomously to allocate goods and services; and special identifying services over the Internet.

Businesses often develop private intranets for sharing information and collaborating within the company, these networks usually being isolated from the surrounding Internet by special computer-security systems. Businesses also often rely on extranets which are extensions of a company’s intranet. Such extranets allow portions of company’s internal network to be accessible to collaborating businesses, access to the ones being generally restricted through passwords.

One should mention some more important benefits of e-commerce. Due to its development the role of geographic distance in forming business relationships is being reduced. If you were interested in the beginning of a retail business, it would be relatively inexpensive to start a retail Web site. Some traditional businesses are being replaced by their electronic equivalents or are being made entirely useless. Having published fare information and enabled ticketing directly over the Internet, airlines have greatly decreased the role of traditional agencies. Prices of commodity products are generally lower on the Web and it results not only from the lower costs of doing electronic business but also from the ease of comparison shopping in cyberspace. A new form of collaboration known as a virtual company is flourishing now. This type of company is actually a network of firms, each performing some of the processes needed to manufacture a product or deliver a service.

## **II. Give English equivalents to the following Ukrainian adjectives:**

Акуратний, попередній, схожий, відносний, різноманітний, вірний, поточний, доступний, тимчасовий, загальний, альтернативний, граничний, матеріальний, застарілий, початковий.

## **III. Give English equivalents:**

- 1) електронна пошта;
- 2) мікросхема (чіп), інтегральна схема;
- 3) інтерактивний, діалоговий, оперативний; підключений (пристрій);
- 4) програмне або математичне забезпечення; засоби програмного забезпечення;
- 5) вікно перегляду; програма перегляду;
- 6) світ комп'ютерної мережі;
- 7) міжмережевий;
- 8) розташування, вузол (мережі);
- 9) послідовність або набір записів;
- 10) каталог; структура даних, елементи якої описують файли та надають доступ до них по текстовим назвам.

## **IV. Make up adjectives from these verbs:**

to add –

to economize –

to rely –

to value –

to compete –

to limit –

to direct –

to compare –

to favour –

to produce –

to specify –



to vary –  
to differ –

**V. Complete the following sentences using the words from the text.**

- 1) There are a lot of ... computer network and data services providing indirect connection to the Internet.
- 2) Economists often ... their models and concepts with figures taken from statistical reports.
- 3) The ... electronic computer using vacuum tubes was kept a great secret for decades after it was built.
- 4) It is essential to ... and improve access to proper training in computer use to all students at schools, colleges and universities.
- 5) Summer and winter ... are popular with consumers in different countries.
- 6) E-mail can ... both texts and graphics to computer users.
- 7) The type of production is often influenced by the ... conditions.
- 8) Even people in ... places of the world can have access to the computer network.
- 9) The development of programmes ensuring ... storage of information in computers is one of the important tasks of many programmers.
- 10) Explaining the basic economic principles the lecturers often ... to the works of Adam Smith and David Ricardo.

**VI. Answer the questions on the text:**

- 1) What were the original uses of the Internet?
- 2) Why has the Internet spread so widely all over the world?
- 3) How can individuals and businesses use the Internet?
- 4) What does electronic commerce include?
- 5) When did e-commerce appear?
- 6) What promoted the development of e-commerce?
- 7) What are the benefits of e-commerce in comparison with the traditional retail system?
- 8) What are intranets and extranets used for?

**Text 2**

**I. Read and translate the text.**

**WHAT IS A COMPUTER**

The term computer is used to describe a device made up of a combination of electronic and electromechanical (part electronic and part mechanical) components. Computer has no intelligence by itself and is referred to as hardware. A computer system is a combination of five elements:

- Hardware
- Software
- People
- Procedures

- Data / information

When one computer system is set up to communicate with another computer, connectivity becomes the sixth system element. In other words, the manner in which the various individual systems are connected – for example, by phone lines, microwave transmission, or satellite – is an element of the total computer system.

Software is the term used to describe the instructions that tell the hardware how to perform a task. Without software instructions, the hardware doesn't know what to do. People, however, are the most important component of the computer system: they create the computer software instructions and respond to the procedures that those instructions present.

The basic job of computer is processing information. Computers accept information in the form of instruction called a programme and characters called data to perform mathematical and logical operations, and then give the results. The data is raw material while information is organized, processed, refined and useful for decision making. Computer is used to convert data into information

## **II. Which of the listed below statements are true / false. Specify your answer using the text.**

- 1) Computer is made of electronic components so it is referred to as electronic device.
- 2) Computer has no intelligence until software is loaded.
- 3) There are five elements of computer system: hardware, software, people, diskettes and data.
- 4) The manner in which computers are connected is the connectivity.
- 5) Without software instructions hardware doesn't know what to do.
- 6) The software is the most important component because it is made by people.
- 7) The user inputs data into computer to get information as an output.
- 8) Computer is used to help people in decision making process.

## **III. Match the following:**

- 1) .....doesn't come to life until it is connected to other parts of a system.
  - 2) .....is the term used to describe the instructions that tell the hardware how to perform a task.
  - 3) .....create the computer software instructions and respond to the procedures that those instructions present
  - 4) Information in the form of instruction is called a .....
  - 5) The manner in which the various individual systems are connected is .....
  - 6) .....is organized, processed and useful for decision making.
  - 7) The basic job of the computer is the .....
- a) programme
  - b) information
  - c) processing of information

- d) software
- e) connectivity
- f) computer
- g) people

#### **IV. Answer the questions:**

- 1) What does the term “computer” describe?
- 2) Is computer intelligent?
- 3) What are five components of computer system?
- 4) What is connectivity?
- 5) What’s the difference between hardware and software?
- 6) Why people are the most important component of a computer system?

#### **V. Give English equivalents using the text.**

розум -  
манера, спосіб –  
процедури –  
мікрохвильова –  
мета –  
з’єднувати –  
сировина–  
перетворювати –  
очищати –  
передача –

### **Text 3**

#### **I. Read and translate the text.**

##### **INTERNET**

Millions of people around the world use the Internet to search for and retrieve information on all sorts of topics in a wide variety of areas including the arts, business, government, humanities, news, politics and recreation. People communicate through electronic mail (e-mail), discussion groups, chat channels and other means of informational exchange. They share information and make commercial and business transactions. All this activity is possible because tens of thousands of networks are connected to the Internet and exchange information in the same basic ways.

The World Wide Web (WWW) is a part of the Internet. But it’s not a collection of networks. Rather, it is information that is connected or linked together like a web. You access this information through one interface or tool called a Web browser. The number of resources and services that are part of the World Wide Web is growing extremely fast. By using a computer terminal (hardware) connected to a network that is a part of the Internet, and by using a programme (software) to browse or retrieve information that is a part of the World Wide Web, the people connected to the Internet and World Wide Web through the local providers have access to a variety of

information. Each browser provides a graphical interface. You move from place to place, from site to site on the Web by using a mouse to click on a portion of text, icon or region of a map. These items are called hyperlinks or links. Each link you select represents a document, an image, a video clip or an audio file somewhere on the Internet.

All sorts of things are available on the WWW. One can use Internet for recreational purposes. Many TV and radio stations broadcast live on the WWW. Essentially, if something can be put into digital format and stored in a computer, then it's available on the WWW. You can even visit museums, gardens and cities throughout the world, learn foreign languages and meet new friends. And, of course, you can play computer games through WWW, competing with partners from other countries and continents.

**II. Which of the listed below statements are true / false. If it is false – correct**

- 1) There are still not so many users of the Internet.
- 2) There is information on all sorts of topics on the Internet, including education and weather forecasts.
- 3) People can communicate through e-mail and chat programmes only.
- 4) Internet is tens of thousands of networks which exchange the information in the same basic way.
- 5) You can access information available on the World Wide Web through the Web browser.
- 6) You need a computer (hardware) and a special programme (software) to be a WWW browser.
- 7) You move from site to site by clicking on a portion of text only.
- 8) Every time the user wants to move somewhere on the web he/she needs to step enter links and addresses.
- 9) Films and pictures are not available on the Internet.
- 10) Radio and TV-broadcasting is a future of Internet. They're not available yet.

**III. Define the following:**

- 1) Internet
- 2) World Wide Web
- 3) Web browser
- 4) Internet provider
- 5) Hyperlinks

**IV. Match the following:**

- 1) You access the information through one interface or tool called a .....
- 2) People connected to the WWW through the local .....have access to a variety of information.

- 3) The user doesn't need to know where the sites is, the.....follows the .....
- 4) In 1996 there were more than 20 million users of the.....
- 5) Each.....provides a graphical interface.
- 6) Local.....charge money for their services to access.....resources.

*Words to match with:*

Web browser, providers, link, WWW

#### **V. Questions to answer:**

- 1) What is Internet used for?
- 2) What is WWW?
- 3) What does a user need to have an access to the WWW?
- 4) What resources are available on the WWW?

#### **VI. Give English equivalents using the text**

- 1) різноманіття -
- 2) мережа -
- 3) розподіляти -
- 4) розваги -
- 5) гуманітарні науки -
- 6) комерційні операції -
- 7) доступ -
- 8) програма пошуку інформації (браузер) -
- 9) забезпечувати -
- 10) транслювати, передавати у прямому ефірі -
- 11) гіперпосилання -
- 12) конкурувати –

### **Text 4**

#### **I. Study the words and word combinations**

circuitry	електричне коло
CPU, microprocessor	мікропроцесор
hard disk	вінчестер, жорсткий диск
input hardware	пристрій вводу даних
output hardware	пристрій виводу
	відображення інформації
via	через
processing hardware	пристрій обробки даних
RAM	(пристрій оперативного запам'ятовування)
ROM	(пристрій постійного запам'ятовування)
CD-ROM	компакт-диск

scanner	сканер
sophisticated	складний
storage hardware	пристрій збереження даних
temporarily	тимчасово
tier	ряд, ярус
to convert	перетворювати
to execute	виконувати
to roll	катати, перекачувати
volatile	нестійке, тимчасове

## II. Read and translate the texts

### HARDWARE

What is hardware? Webster's dictionary gives us the following definition of the hardware – the mechanical, magnetic, electronic, and electrical devices composing a computer system.

Computer hardware can be divided into four categories:

- 1) input hardware
- 2) processing hardware
- 3) storage hardware
- 4) output hardware

#### INPUT HARDWARE

The purpose of the input hardware is to collect data and convert it into a form suitable for computer processing. The most common input device is a keyboard. It looks very much like a typewriter. The mouse is a hand held device connected to the computer by small cable. As the mouse is rolled across the mouse pad, the cursor moves across the screen. When the cursor reaches the desired location, the user usually pushes a button on the mouse once or twice to signal a menu selection or a command to the computer.

The light pen uses a light sensitive photoelectric cell to signal screen position to the computer. Another type of input hardware is optic-electronic scanner that is used to input graphics as well as typeset characters. Microphone and digital camera can be also used to input data into the computer.

#### PROCESSING HARDWARE

The purpose of processing hardware is retrieve, interpret and direct the execution of software instructions provided to the computer. The most common components of processing hardware are the Central Processing Unit and main memory.

The Central Processing Unit (CPU) is the brain of the computer. It reads and interprets software instructions and coordinates the processing activities that must take place. The design of the CPU affects the processing power and the speed of the computer, as well as the amount of main memory it can use effectively. With a well-designed CPU in your computer, you can perform highly sophisticated tasks in a very short time.

Memory is the system of component of the computer in which information is stored. There are two types of computer memory: RAM and ROM.

RAM (random access memory) is the volatile computer memory, used for creating loading, and running programs and for manipulating and temporarily storing data;

ROM (read only memory) is nonvolatile, nonmodifiable computer memory, used to hold programmed instructions to the system.

The more memory you have in your computer, the more operations you can perform that is the faster it works.

#### STORAGE HARDWARE

The purpose of storage hardware is to store computer instructions and data in a form that is relatively permanent and. Storage hardware serves the same basic functions as do office filing systems except that it stores data as electromagnetic signals. The most common ways of storing data are Hard disk (HDD), floppy disk and CD-ROM.

Hard disk is a rigid disk coated with magnetic material, for storing programs and relatively large amounts of data.

Floppy disk (diskette) – thin, usually flexible plastic disk coated with magnetic material, for storing computer data and programs.

CD-ROM (compact disc read only memory) is a compact disc on which a large amount of digitized read-only data can be stored. CD-ROMs are very popular now because of the growing speed which CD-ROM drives can provide nowadays.

#### OUTPUT HARDWARE

The purpose of output hardware is to provide the user with the means to view information produced by the computer system. Information is output in either hardcopy or softcopy form. Hardcopy output can be held in your hand, such as paper with text (word or numbers) or graphics printed on it. Softcopy output is displayed on a monitor.

Monitor is a component with a display screen for viewing computer data, television programs, etc.

Printer is a computer output device that produces a paper copy of data or graphics.

Modem is an example of communication hardware – an electronic device that makes possible the transmission of data to or from computer via telephone or other communication lines.

Hardware comes in many configurations, depending on what the computer system is designed to do. Hardware can fill several floors of a large office building or can fit on your lap.

### **III. Answer the questions:**

1. What is the Webster's dictionary definition of the hardware?
2. What groups of hardware could be defined?
3. What is input hardware? What are the examples of input hardware?
4. What is mouse designed for? What is a light pen?

5. What is processing hardware? What are the basic types of memory used in a PC?
6. Can a PC-user change the ROM? Who records the information in ROM?
7. What is storage hardware? What is CD-ROM used for? Can a user record his or her data on a CD? What kind of storage hardware can contain more information: CD-ROM, RAM or ROM?
8. What is modem used for? Can PC-user communicate with other people without a modem?

**IV. Which of the listed below statements are true/false. Specify your answer using the text.**

- 1) Computer is an electronic device therefore hardware is a system of electronic devices.
- 2) The purpose of the input hardware is to collect data and convert it into a form suitable for computer processing.
- 3) Scanner is used to input graphics only.
- 4) The purpose of processing hardware is to retrieve, interpret and direct the execution of software instructions provided to the computer.
- 5) CPU reads and interprets software and prints the results on paper.
- 6) User is unable to change the contents of ROM.
- 7) Printer is a processing hardware because its purpose is to show the information produced by the system.
- 8) Modem is an electronic device that makes possible the transmission of data from one computer to another via telephone or other communication lines.
- 9) The purpose of storage hardware is to store computer instructions and data in a form that is relatively permanent and retrieve them when needed for processing.

**V. Give definitions to the following:**

- 1) CPU
- 2) ROM
- 3) CD-ROM
- 4) Printer
- 5) Modem
- 6) Mainboard
- 7) Hard disk
- 8) Keyboard
- 9) Sound-card

**VI. Which of the following is Hardware:**

- 1) program
- 2) mouse
- 3) CPU
- 4) printer
- 5) modem



- 6) command
- 7) port
- 8) cursor or the pointer
- 9) keyboard
- 10) character

## **VII. Match the following:**

- 1) процесор
- 2) клавіатура
- 3) миша
- 4) дискета
- 5) вінчестер
- 6) модем
- 7) екран
- 8) пристрій оперативного запам'ятовування
- 9) пристрій постійного запам'ятовування

- a) nonvolatile, nonmodifiable computer memory, used to hold programmed instructions to the system.
- b) the part of a television or computer on which a picture is formed or information is displayed.
- c) rigid disk coated with magnetic material, for storing computer programs and relatively large amounts of data.
- d) an electronic device that makes possible the transmission of data to or from computer via telephone or other communication lines.
- e) a set of keys, usually arranged in tiers, for operating a typewriter, computer terminal, or the like.
- f) volatile computer memory, used for creating, loading, and running programs and for manipulating and temporarily storing data; main memory.
- g) central processing unit: the key component of a computer system, containing the circuitry necessary to interpret and execute program instructions.
- h) a palm-sized device equipped with two or more buttons, used to point at and select items on a computer display screen and for controlling the cursor by means of analogous movement on a nearby surface.
- i) a thin, usually flexible plastic disk coated with magnetic material, for storing computer data and program.

## **VIII. Questions to answer:**

- 1) Without what parts computer is unable to work?
- 2) What is the most expensive part of the hardware?
- 3) What other hardware devices do you know? What are they for? How to use them?

## UNIT 4

### Text 1

#### I. Read and translate the text.

### ELECTRIC CURRENT

Ever since Volta first produced a source of continuous current, men of science have been forming theories on this subject. For some time they could see no real difference between the newly-discovered phenomenon and the former understanding of static charges. Then the famous French scientist Ampere (after whom the unit of current was named) determined the difference between the current and the static charges. In addition to it, Ampere gave the current direction: he supposed the current to flow from the positive pole of the source round the circuit and back again to the negative pole.

We consider Ampere to be right in his first statement but he was certainly wrong in the second as to the direction of the current. The student is certain to remember that the flow of current is in a direction opposite to what he thought.

Let us turn our attention now to the electric current itself. The current which flows along wires consists of moving electrons. What can we say about the electron? We know the electron to be a minute particle having an electric charge. We also know that that charge is negative. As these minute charges travel along a wire, that wire is said to carry an electric current.

In addition to travelling through solids, however, the electric current can flow through liquids as well and even through gases. In both cases it produces some most important effects to meet industrial requirements.

Some liquids, such as melted metals for example, conduct current without any change to themselves. Others, called electrolytes, are found to change greatly when the current passes through them.

When the electrons flow in one direction only, the current is known to be d.c., that is, direct current. The simplest source of power for the direct current is a battery, for a battery pushes the electrons in the same direction all the time (i.e., from the negatively charged terminal to the positively charged terminal).

The letters a.c. stand for alternating current. The current under consideration flows first in one direction and then in the opposite one. The a.c. used for power and lightning purposes is assumed to go through 50 cycles in one second. One of the great advantages of a.c. is the ease with which power at low voltage can be changed into an almost similar amount of power at high voltage and vice versa. Hence, on the one hand alternating voltage is increased when it is necessary for long-distance transmission and, on the other hand, one can decrease it to meet industrial requirements as well as to operate various devices at home. Although there are numerous cases when d.c. is required, at least 90 per cent of electrical energy to be generated at present is a.c. in fact, it finds wide application for lightning, heating, industrial, and some other purposes.

**II. Form six sentences combining suitable parts of the sentences given in columns I and II**

I	II
1. The electric current is	1. the energy of position.
2. Kinetic energy is	2. electricity at rest.
3. Static electricity is	3. the flow of moving electrons.
4. Potential energy is	4. the energy of motion.
5. The direct current is	5. a discharge of electricity.
6. Lightning is	6. the flow of electrons in one direction.

**III. Answer the following questions.**

1. Who first produced a source of continuous current?
2. After whom was the unit of current named?
3. Who determined the difference between the current and the static charges?
4. What did Ampere suppose?
5. What can you say about an electron?
6. What charges do you know?
7. When does a wire carry an electric current?
8. Do liquids conduct current?
9. What can you say about the electrolytes?
10. What do you call d.c.?
11. What is the advantage of a.c.?
12. Where is a.c. used?

**IV. Find the wrong statements and correct them.**

1. Electrons flow from the positively charged terminal of the battery to the negatively charged terminal.
2. Ampere supposed the current to flow from the negative pole to the positive one.
3. Static electricity is not very high in voltage and it is easy to control it.
4. Static electricity is used for practical purposes.
5. To show that the charges are unlike and opposite Franklin decided to call the charge on the rubber positive and that on the glass negative.
6. Galvani thought that electricity was generated because of contact of the two dissimilar metals used.
7. Volta took great interest in atmospheric electricity and began to carry on experiments.
8. The direct current is known to flow in one direction and then in the opposite one.
9. The direct current used for power and lightning purposes is assumed to go through 50 cycles a second.

### **V. Define the following terms.**

Battery, alternating current, direct current, static electricity, electric current, wire, laboratory, terminal, electron.

### **VI. Ask your partner the following questions. Let him/her answer them.**

- 1) if electricity is a form of energy.
- 2) if there are two types of electricity.
- 3) if alternating voltage can be increased and decreased.
- 4) if Franklin made an important contribution to the science of electricity
- 5) if Ampere determined the difference between the current and the static charges.
- 6) if the electric current can flow through liquids and through gases.
- 7) if the electrolytes change greatly when the current passes through them.
- 8) if a negatively charged electron will move to the positive end of the wire.

### **VII. Put two questions to each paragraph of the text.**

#### **VIII. Explain why:**

- 1) Static electricity cannot be used to light lamps, to boil water, to run electric trains and so on.
- 2) Voltage is increased and decreased.
- 3) The unit of electric pressure is called the volt.
- 4) Students must learn English.
- 5) Ampere was wrong as to the current direction.
- 6) The current is said to flow the positive end of the wire to its negative end.

## **Text 2**

### **I. Read and translate the text.**

#### **MAGNETISM**

In studying the electric current, we observe the following relation between magnetism and the electric current: on the one hand magnetism is produced by the current and on the other hand the current is produced from magnetism.

Magnetism is mentioned in the oldest writings of man. Romans, for example, knew that an object looking like a small dark stone had the property of attracting iron. However, nobody knew who discovered magnetism or where and when the discovery was made. Of course, people could not help repeating the stories that they had heard from their fathers and so on.

One story tells us of a man called Magnus whose iron staff was pulled to a stone and held there. He had great difficulty in pulling his staff away. Magnus carried the stone away with him in order to demonstrate its attracting ability among his friends. This unfamiliar substance was called Magnus after its discoverer, this name having come down to us as Magnet.

According to another story, a great mountain by the sea possessed so much magnetism that all passing ships were destroyed because all their iron parts fell out. They were pulled out because of the magnetic force of that mountain.

The earliest practical application of magnetism was connected with the use of a simple compass consisting of one small magnet pointing north and south.

A great step forward in the scientific study of magnetism was made by Gilbert, the well-known English physicist (1540-1603). He carried out various important experiments on electricity and magnetism and wrote a book where he put together all that known about magnetism. He proved that the earth itself was a great magnet.

Reference must be made here to Galileo, the famous Italian astronomer, physicist and mathematician. He took great interest in Gilbert's achievements and also studied the properties of magnetic materials. He experimented with them trying to increase their attracting power. One of his magnets, for example, could lift objects weighing 25 times its own weight.

At present, even a schoolboy is quite familiar with the fact that in magnetic materials, such as iron and steel, the molecules themselves are minute magnets, each of them having a north pole and south pole. When iron and steel are magnetized, the molecules arrange themselves in a new orderly way instead of the disarrangement in which they neutralize each other.

Dividing a bar magnet into two parts, one finds that each of the two parts is a magnet having both a north pole and a south pole. Thus, we obtain two magnets of a smaller size instead of having a single one of a larger size. Dividing one of these two smaller magnets into two will give us the same result. Thus we could continue this process, always getting similar results.

On placing an unmagnetized iron bar near a strong magnet, we magnetize it. Rubbing the magnet is not required for that process. In other words, our iron bar has been magnetized by the strong magnet without rubbing it.

**II. Find the sentences with non-finite forms expressing a) simultaneousness of action; b) priority of action. Translate them into your native language.**

1. Protecting building from strokes of lightning was a great achievement in the field of electricity. 2. Speaking of the magnet, the inventor made reference to its property of attracting iron and steel. 3. Experiments showing the changes in substances are very important for industry. 4. The teacher objects to our translating such an easy text with a dictionary. 5. Soviet people constructed many hydroelectric stations, the one on the Angara being one of the largest. 6. In studying magnetism, we cannot help observing the relation between magnetism and the electric current. 7. Having invented the lightning conductor, Franklin continued working at the problem of atmospheric electricity. 8. The experiments having been made, we could discuss the results. 9. The atoms of different substances have different weights, their properties being also different. 10. Having experimented with electricity and magnetism, Gilbert

wrote a book on magnetism. 11. Gilbert greatly contributed to the study of magnetism, Galileo taking great interest in Gilbert's achievements.

**III. Form sentences with each of the following words.**

Similar, simple, single; some, the same.

**IV. Use the following expressions in sentences of your own:**

All over the world, as well as, in this connection, in the form of, needless to say, to pay attention to, on the other hand.

**V. Translate the following questions and answer them.**

1. Чи існує зв'язок між електрикою і магнетизмом? 2. Чи знаєте ви, хто відкрив магнетизм? 3. Що ви знаєте про атмосферну електрику? 4. Хто довів, що наша Земля є великий магніт? 5. Що ви знаєте про магнетизм? 6. Які властивості має магніт? 7. Хто був зацікавлений у досягненнях Гільберта? 8. Які експерименти проводив Франклін? 9. Які магнітні матеріали ви знаєте? 10. Які властивості матеріалів вивчав Галілей?

**VI. Rearrange the sentences to make up a story of Franklin's kite experiment.**

1. The key was connected to the lower end of the string. 2. The story about Franklin's famous kite is known all over the world. 3. They took some necessary things such as: a kite with a long string, a key, and so on. 4. It was proved that lightning is a discharge of electricity. 5. It was a stormy day. 6. The electricity was conducted from the clouds down the string to the key. 7. The kite was flying high among the clouds. 8. The rain wetted the string. 9. Atmospheric electricity greatly interested Franklin. 10. The rain fell.

**Text 3**

**I. Read and translate the text.**

**ELECTRIC CIRCUIT**

The electric circuit is the subject to be dealt with in the present article. But what does the above term really mean? We know the circuit to be a complete path which carries the current from the source of supply to the load and then carries it again from the load back to the source.

The purpose of the electrical source is to produce the necessary electromotive force required for the flow of current through the circuit.

The path along which the electrons travel must be complete otherwise no electric power can be supplied from the source to the load. Thus we close the circuit when we switch on our electric lamp.

If the circuit is broken or, as we generally say "opened" anywhere, the current is known to stop everywhere. Hence, we break the circuit when we switch off our electrical devices. Generally speaking the current may pass through solid conductors,

liquids, gases, vacuum, or any combination of these. It may flow in turn over transmission lines from the power-stations through transformers, cables and switches, through lamps, heaters, motors and so on.

There are various kinds of electric circuits such as: open circuits, closed circuits, series circuits, parallel circuits and short circuits.

To understand the difference between the following circuit connections is not difficult at all. When electrical devices are connected so that the current flows from one device to another, they are said to be connected in series. Under such conditions the current flow is the same in all parts of the circuits, as there is only a single path along which it may flow. The electrical bell circuit is considered to be a typical example of a series circuit. The parallel circuit provides two or more paths for the passage of current. The circuit is divided in such a way that part of the current flows through one path, and part through another. The lamps in your room and your house are generally connected in parallel.

Now we shall turn our attention to the short circuit, sometimes called “the short”. The short circuit is produced when the current is allowed to return to the source of supply without control and without doing the work that we want it to do. The short circuit often results from cable fault or wire fault. Under certain conditions, the short may cause fire because the current flows where it was not supposed to flow. If the current flow is too great a fuse is to be used as a safety device to stop the current flow. If the current flow is too great a fuse is to be used as a safety device to stop the current flow.

The fuse must be placed in every circuit where there is a danger of overloading the line. Then all the current to be sent will pass through the fuse

When a short circuit or an overload causes more current to flow than the carrying capacity of the wire, the wire becomes hot and sets fire to the insulation. If the flow of current is greater than the carrying capacity of the fuse, the fuse melts and opens the circuit.

## **II. Give suitable prepositions where necessary.**

a) form sentences with the following Infinitives.

To answer, to apply, to be interested, to contribute, to consist, to depend, to enter, to connect, to play a part, to pay attention, to go, to be followed, to carry.

## **III. Fill in the blanks with the words and expressions given below:**

*As, as well, as well as.*

1. It is necessary to remember the term “circuit” ... it is impossible to work with electricity without circuits.
2. A short circuit may cause wire fault ... cable fault.
3. Travelling through solids, the electric current can flow through liquids and gases ... .
4. The magnitude of the current ... the voltage and resistance may vary from a small amount to a very large quantity.

5. ... a cold object and a hot one are brought into contact, the former gets warmer and the latter gets colder.
6. Fuses are used ... safety devices.
7. ... a cold conductor becomes warmer it is unable to pass charges ... it did before.

**IV. Ask your partner the following questions.**

1. If a circuit is a complete path.
2. If there are different kinds of circuits.
3. If the current can pass through liquids.
4. If we open the circuit when we switch on the light.
5. If the lamps in the room are connected in series.
6. If the fuse is a safety device. If the fuse must be placed in every circuit.
7. If the current flows when the circuit is closed.

**V. Answer the following questions.**

1. What is discussed in the present article?
2. What do we call an electric circuit?
3. What kinds of circuits do you know?
4. When is a "short" produced?
5. What does a short circuit often result from?
6. What safety device is used in the circuit when the current is too great?
7. What do we mean by the term "short circuit"?
8. What does the term "closed circuit" mean?
9. Why does the current flow when the circuit is closed?
10. What do you call a fuse?
11. Does the current flow when the switch is in the open position?

## **Text 4**

**I. Read and translate the text.**

### **ELECTRICITY MAY BE DANGEROUS**

Many people have had strong shocks from the electric wires in a house. The wires seldom carry current at a higher voltage than 220, and a person who touches a bare wire or terminal may suffer no harm if the skin is dry. But if the hand is wet, he may be killed. Water is known to be a good conductor of electricity and provides an easy path for the current from the wire to the body. One of the main wires carrying the current is connected to earth, and if a person touches the other one with a wet hand, a heavy current will flow through his body to earth and so to the other wire. The body forms part of an electric circuit.

When we are dealing with wires and fuses carrying an electric current, it is best to wear rubber gloves. Rubber is a good insulator and will not let the current pass to the skin. If no rubber gloves can be found in the house, dry cloth gloves are better



than nothing. Never touch a bare wire with the wet hand, and never, in any situation, touch a water pipe and an electric wire at the same time.

We all use electricity in our homes every day but sometimes forget that it is a form of power and may be dangerous. At the other end of the wire there are great generators driven by turbines turning at high speed. One should remember that the power they generate is enormous. It can burn and kill, but it will serve us well if we use it wisely

**II. Find the wrong statement and correct it in several sentences.**

1. The wires carrying the current are connected to earth.
2. Water provides a path for the current to flow.
3. The electric power can serve us well if it is used wisely.

**III. Point out which of the sentences contains the information from the text.**

1. The path along which the electrons travel must be complete.
2. The short circuit often results from cable fault or wire fault.
3. We must always remember that electricity can be dangerous and one should use it carefully.

## UNIT 5

### Text 1

#### IV. Read and translate the text.

##### SCIENCE AND TECHNOLOGY

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

of super stellar objects at distances of billions of light years from us, demand extremely intense efforts on the part of physicists and astrophysicists, the continuous modernization of laboratories with experimental facilities becoming more and more grandiose and costing enormous sums. Moreover, it should be stressed that scientific development in the areas of greatest theoretical significance is drastically limited by the rate of building new research facilities, the latter depending on a number of economic and technological factors not directly linked to the aims of the research. It may take, for example, more than 10 years from the initial decision to build a 100-200 billion electron volt accelerator to its completion. It should be borne in mind, too, that few measurements and reading given by these great facilities push science forward, results of any great significance being very rare. For instance, tens of thousands of pictures taken during the operation of an accelerator will have to be scrutinized in the hope of finding, among typically trite processes, signs of a new interaction or a new event whose presence or absence may confirm a theoretical idea.

**V. Look through the text concentrating on the beginning of each paragraph and write down a plan.**

**VI. Paragraph Study.**

➤ Read paragraph 1.

1. Identify the topic sentence and the illustrating sentences. Find the sentence containing the author's prognosis and the word indicating that it is a prognosis.
2. What is meant by the *situation* and *these very areas*?

➤ Read paragraph 2.

1. Identify the topic sentence. Answer the questions:
  - a) What are the two motive forces behind synthetic and analytic research?
  - b) What are the consequences arising from the change in motivation for research?
  - c) What is the present-day relation between science and technology?
  - d) What is meant by *the doing*?
2. Identify two sentences similar in meaning in paragraph 1 and 2.
3. Identify the words which reveal a comparison in the first sentence of paragraph 2.
4. Translate the last sentence of the paragraph into your native language.

➤ Read paragraph 3.

1. Identify the topic sentence and the sentences developing its idea.
2. Give Ukrainian equivalents of *of striving to reach the essence ...* and *the workshop of bold technical ideas*.

**VII. Look through the paragraphs again and indicate the words and word groups used to connect the paragraphs and the sentences within them**

➤ Read paragraph 4.

1. Follow the word science through the paragraph and copy out the words related to it in meaning. State the main idea of the paragraph.
2. Copy out the sentence summed up by the word impression.
3. Copy out the words equivalent to: непрерывный поток, дерзкая теория лавинообразный.

➤ Read paragraph 5.

1. Divide the paragraph into three parts with the following titles: Subject of Research, Tools of Research and Results of Research. Indicate the beginning of each part.
2. Read the first sentence again and copy out the words indicating that the popular view on science is not adequate.

## **Text 2**

### **I. Read and translate the text.**

#### **WHAT SCIENCE IS**

1. It can be said that science is a cumulative body of knowledge about the natural world, obtained by the application of a peculiar method practiced by the scientist. It is known that the word science is derived from the Latin “scire”, to know, to have knowledge of, to experience. Fundamental and applied sciences are commonly distinguished, the former being concerned with fundamental laws of nature, the latter engaged in application of the knowledge obtained. Technology is the fruit of applied science, being the concrete practical expression of research done in the laboratory and applied to manufacturing commodities to meet human needs.
2. The word “scientist” was introduced only in 1840 by a Cambridge professor of philosophy who wrote: “We need a name for describing a cultivator of science in general. I should be inclined to call him a scientist”. “The cultivators of science” before that time were known as “natural philosophers”. They were curious, often eccentric, persons who poked inquiring fingers at nature. In the process of doing so they started a technique of inquiry which is now referred to as the “scientific method”.
3. Briefly, the following steps can be distinguished in this method. First comes the thought that initiated the inquiry. It is known, for example, that in 1896 the physicist Henri Becquerel, in his communication to the French Academy of Sciences, reported that he had discovered rays of an unknown nature emitted spontaneously by uranium salts. His discovery excited Marie Curie, and together with her husband Pierre Curie she tried to obtain more knowledge about the radiation. What was it exactly? Where did it come from?
4. Second comes the collecting of facts: the techniques of doing this will differ according to the problem which is to be solved. But it is based on the

experiment in which anything may be used to gather the essential data – from a test-tube to an earth-satellite. It is known that the Curies encountered great difficulties in gathering their facts, as they investigated the mysterious uranium rays.

5. This leads to step three: organizing the facts and studying the relationships that emerge. It was already noted that the above rays were different from anything known. How to explain this? Did this radiation come from the atom itself? It might be expected that other materials also have the property of emitting radiation. Some investigations made by Mme Curie proved that this was so. The discovery was followed by further experiments with “active” radioelements only.
6. Step four consists in stating a hypothesis or theory: that is, framing a general truth that has emerged, and that may be modified as new facts emerge. In July 1898, the Curies announced the probable presence in pitchblende ores of a new element possessing powerful radioactivity. This was the beginning of the discovery of radium.
7. Then follows the clearer statement of the theory. In December 1898, the Curies reported to the Academy of Sciences: “The various reasons enumerated lead us to believe that the new radioactive substance contains a new element to which we propose to give the name of radium. The new radioactive substance certainly contains a great amount of barium, and still its radioactivity is considerable. It can be suggested therefore that the radioactivity of radium must be enormous”.
8. And the final step is the practical test of the theory, i.e. the prediction of new facts. This is essential, because from this flows the possibility of control by man of the forces of nature that are newly revealed.
9. Note should be taken of how Marie Curie used deductive reasoning in order to proceed with her research, this kind of “detective work” being basic to the methodology of science. It should be stressed further that she dealt with probability – and not with certainty – in her investigation. Also, although the Curies were doing the basic research work at great expense to themselves in hard physical toil, they knew that were part of an international group of people all concerned with their search for truth. Their reports were published and immediately examined by scientists all over the world. Any defects in their arguments would be pointed out to them immediately.

## **II. Give Ukrainian / Russian equivalents to the following words and phrases:**

To refer to, to distinguish, to encounter difficulties, to emerge, at great expense, search for truth, to point out.

## **III. Look through the text concentrating on the beginning and the end of each paragraph, and write an outline.**

#### IV. Paragraph study.

➤ Read paragraph 1.

1. Follow the dominant noun and the words related to it in meaning through the paragraph and state the main idea.

2. Give Ukrainian equivalents of: *a cumulative body of knowledge, a peculiar method practiced by the scientist, manufacturing commodities to meet human needs.*

➤ Read paragraph 2.

1. Follow the dominant noun and its equivalents through the paragraph, identify the sentence which repeats the idea expressed in the first sentence of the text.

2. Identify the words used by the author as equivalent to: *направляли свой пытливый ум на...*

3. Identify the words used by the author as equivalent to *doing so, a technique of inquiry.*

➤ Read paragraph 3.

1. Identify the topic sentence and the illustrating sentences. Among the latter identify the dominant noun and follow it through its transformations into its equivalents and pronouns.

2. Give a Russian equivalent of *initiates.*

➤ Read paragraph 4.

1. Identify the topic sentence. Follow the words *the collecting of facts* through their transformations into their equivalents and pronouns.

2. Identify the words equivalent to: *столкнуться с трудностями, пробирка, в зависимости от проблемы.*

➤ Read paragraph 5.

1. Identify the topic sentence and the illustrating sentences. Find the sentence describing the first step on the way to a hypothesis (What modal verb is used to show that it is only the first step?)

2. Identify the words used by the author as equivalent to *this was so.*

3. Give a Russian/Ukrainian equivalent of *emerge.* Translate the last sentence of the paragraph into Ukrainian.

➤ Read paragraph 6.

1. Identify the topic sentence and the illustrating sentences. Find the sentence describing the next step in the development of the hypothesis (What word shows that it is a hypothesis?) state the function of *that is* and give its Ukrainian equivalent.

2. Translate the first sentence into Russian/Ukrainian.

➤ Read paragraphs 7 and 8.

1. Identify the topic sentence and the illustrating sentences. Find the sentence describing the final step in the development of the hypothesis.

2. Find the guide words to the author's thought equivalent to: *несомненно, несмотря на это, на этом основании.*

3. Try to explain the author's choice of the modal verbs.

4. Find the English equivalent of i.e. in paragraph 6.

➤ Read paragraph 9.

1. State the role of deductive reasoning in science. Indicate the words characterizing the conditions under which the Curies worked.

2. Translate paragraph 9 into your native language.

**V. Read the whole text again and see if any corrections should be made in your original outline. Write an abstract of the text in three sentences.**

## REFERENCES

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