

ФЕДЕРАЛЬНОЕ АГЕНТСТВО ПО ОБРАЗОВАНИЮ  
Государственное образовательное учреждение  
высшего профессионального образования  
САНКТ-ПЕТЕРБУРГСКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ  
АЭРОКОСМИЧЕСКОГО ПРИБОРОСТРОЕНИЯ

---

Составитель О. В. Мартынов  
Рецензент доцент кафедры иностранных языков ГУАП *И. А. Громова*

Представлены тексты и упражнения по курсу английского языка  
для студентов второго курса по специальности «Информационные  
системы».

# TEXTS AND EXERCISES ON INFORMATION SCIENCE

---

Подписано к печати 01.10.06. Формат 60х84 1/16. Бумага офсетная.  
Печать офсетная. Усл.-печ. л. 3,25. Тираж 100 экз. Заказ №

---

Отпечатано с оригинал макета автора  
Редакционно-издательский центр ГУАП  
190000, Санкт-Петербург, Б. Морская ул., 67

Санкт-Петербург  
2006

© ГУАП, 2006

## TEXT 1

Computers are now essential in many areas of life - modern banking, information technology and many others. However, this is not true for education.

There are some subjects which may be better taught using computers. Elementary mathematics, elementary language learning, any subject that requires a student to memorize basic facts through repetition is good to computer learning. The computer can be programmed to provide an endless number of simple questions, and as the student answers these questions the facts are learned.

However, in the learning and practice of more complex ideas, the computer is not adequate. A computer can evaluate an answer as right or wrong, but it cannot determine why. It cannot find out why a student is making mistakes, and then explain important concepts in a different way so the student will understand. Task connected with explanation cannot be taught by computers as there are too many variables for a computer to deal with successfully.

Thus, while computers may be useful for practicing simple skills, they are not an essential feature of modern education. Until further developments in computers are made, the human teacher will remain indispensable.

## ASSIGNMENT TO TEXT 1

### I. Read and translate the text.

### II. Answer the following questions:

1. Which areas of life are computers essential in? 2. What are the subjects which can be taught with the help of computers? 3. What can't a computer determine and why?

### III. Write out sentences with the Passive Voice and translate them.

### IV. Make all types of questions to the following sentence:

there are some subjects which may be better taught using computers.

### V. Translate from English into Russian the following:

1. information technology. 2. elementary language learning. 3. to provide an endless number of simple questions. 4. more complex ideas. 5. to explain important concepts. 6. to practice simple skills.

### VI. Match up:

simple ..... ideas  
modern ..... an answer  
information ..... skills  
elementary ..... learning  
computer ..... concepts  
complex... ..... technology  
to evaluate ..... banking  
important ..... mathematics

### VII. Fill in the blanks:

indispensable, variables, important concepts, a computer, evaluate, computer learning

1. If you want to memorize basic facts through repetition you can refer to ...
2. A computer can only ... whether the answer is right or wrong.
3. ... can't find out why a student makes mistakes.
4. A computer can't explain ... so that the student will understand them.
5. As there are too many ... the computer can't deal with them successfully.
6. The computers are ... in practicing simple skills.

### VIII. Translate:

1. Так как существует множество переменных, компьютеры не могут выполнять задания, связанные с объяснением.
2. Компьютер не может объяснить сложные идеи таким образом, чтобы студент понял их.
3. Компьютер незаменим при отработке простых навыков.
4. Компьютер может быть запрограммирован задавать простые вопросы.
5. Компьютер необходим в современном банковском деле, информационных технологиях и в какой-то степени в образовании.

### IX. Give summary of the text.

## TEXT 2

### Is there an End to the Computer Race?

Today the word «electronics» is in general usage. Millions of people have electron watches. There are a lot of various radio and TV sets, video cassette recorders and CD players in our houses. In factories and plants we are surrounded with electronically controlled machines and instruments, we are carried by airplanes, ships, trains and cars with built-in electronic devices, and satellites circle the globe. In other words, we are living in an electronic world.

And the center of this world is a tiny silicon plate<sup>1</sup> of a few square millimetres, an integrated circuit<sup>2</sup>, or a chip<sup>3</sup>, as it is more commonly known. The integrated circuit is undoubtedly one of the most sophisticated inventions of man, science and technology. It is in the heart of every electronic device and the more cassette recorders, TV sets and computers we need, the more integrated circuits are required.

When we speak about a further development of computers we mean not only quantity, but also high technology and high speed. As the operation of an integrated circuit depends on microscopic «components», the purity of all materials and the cleanness at the plant they are produced at must be of the highest quality. A continuous search is going on in laboratories throughout the world for more perfect, reliable and high speed electronic circuits.

In the past it took scientists and researchers a whole lifetime to make a few thousand calculations, whereas for a modern computer this task is a matter of a few seconds. At present computers capable of performing billions of operations a second are required. Supercomputers are different from ordinary computers. The ordinary computer does the computations operation by operation, while the supercomputer operates like a brain: all operations are being done simultaneously.

In the next few years engineers will complete the work on computers of above 2 billion operations a second. It will take a few more years to produce a 10-billion operations computer. The fifth-generation computers performing 100 billion operations a second will become available in the near future. Is there an end to this race?

According to some researchers, we are close to what can be regarded as a true physical limit. But other specialists think that photons will make the operation a thousand times faster. This means that in the future it will be

possible to expect the appearance of photon computers and that computations will be done by means of light. Light has several advantages over electronics: light beams are faster, travel in parallel lines and can pass through one another without interference. Already, the optical equivalent of a transistor has been produced, and intensive research on optical-electronic computers is being carried out in a number of countries around the world. In a few decades a new age of light may replace the still youthful electronic age. The race is going on.

Notes to the Text: 1. silicon plate - кремниевая пластина; 2. integrated circuit - интегральная схема; 3. chip – кристалл.

### ASSIGNMENT TO TEXT 2.

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

#### II. Answer the questions to the above text

1. What is this text about? 2. What new things appeared in people's everyday life after World War II? 3. What is at the center of all these things? 4. What applications of computers do you know? 5. Where else may computers be used? 6. How does an ordinary computer (a supercomputer) operate? 7. What is the speed of a new supercomputer? 8. What is the task of engineers in the field of computer development? 9. What types of computers do you know? 10. What are the prospects in the development of computers?

#### III. Make all types of questions to the following sentence:

the integrated circuit is undoubtedly one of the most sophisticated inventions of man, science and technology.

#### IV. Give English equivalents:

электронные часы, видеоманитон, встроенный, дальнейшее развитие, чистота материала, высоко скоростной, одновременно, становится доступным, согласно, луч света.

#### V. Match up:

General.....	speed
electronically controlled.....	beams
integrated.....	computers
high.....	search
continuous.....	usage
photon.....	circuit
light.....	machines

#### VI. Put the words in brackets in the correct order:

1. (but/we/mean/also/computers/we/quantity/and/high speed/when/a further development of/high technology/speak about not only).
2. (electronic circuits/and/in laboratories/reliable/for more perfect/throughout the world/is going on/high speed/a continuous search).
3. (operates/the ordinary computer/all/operation by operation/are being done/the supercomputer/does/simultaneously/the computations/operations/while/like a brain).

#### VII. Fill in the blanks:

true physical limit, high technology and high speed, a continuous search, computations, the integrated circuit

1. ... is in the heart of every electronic device we use at present.
2. When speaking about further development of computers we first of all speak about ...
3. ... is going on in laboratories to work out more perfect, reliable and high speed electronic circuits.
4. The ordinary computer does the ... operation by operation.
5. Some researchers think that with the invention of the fifth generation computers we approach what is called ...

#### VIII. Translate:

1. В центре электронного мира находится маленькая кремниевая пластина, интегральная схема более известная как чип.
2. Изобретение интегральной схемы является одним из самых сложных изобретений человека и науки.
3. Всего несколько десятков лет назад ученым требовалось очень много времени, чтобы сделать несколько тысяч расчетов.
4. Суперкомпьютер отличается от обычного тем, что может выполнять все операции одновременно.
5. Появление фотонных компьютеров обусловлено тем, что они смогут производить операции в тысячу раз быстрее, чем современные компьютеры.
6. Преимущество света заключается в том, что его лучи движутся быстрее и могут проходить друг через друга без помех.

#### IX. Give summary of the text.

#### TEXT 3

##### Read and translate:

Let's look at the progress the computers have made in their development. Besides the great changes in size and speed, we now have machines which change numbers into pictures, words and sounds. The next big change will be when we get computers that will understand human language. But now if you want to programme your own computer, you must learn its language. It does not understand yours. For example you talk with an Englishman. You make one small grammar mistake «have» instead of «has». The man understands what you mean and the talk goes on. But if you make even the smallest mistake in computer language, the talk breaks down and you must go back to the beginning.

#### TEXT 4

##### Read, translate and render the conversation in reported speech.

##### Computers

- Mary: Have you seen an interesting advertisement in the last issue of «The Economist»?
- John: I haven't read it yet.
- M.: The School of Engineering offers a new programme in information system. Applications are invited for jobs in this field.
- J.: Professor Smith has told me about it. This programme is interesting. It is designed to meet the needs of persons with a computing background for their work in management and industry.
- M.: Don't you think that our son can lecture on this new programme?
- J.: Why not? He graduated from the Department of Computer Science and for some years was taking part in the research project connected with the problems of supercomputers and their manufacturing.
- M.: As far as I remember his research interests cover software and application.
- J.: And what do they say about the contract?
- M.: It is a three years' contract and it may be extended for further two years. I'll write Mike a letter.
- J.: It's too long. You'd better call him.

## TEXT 5

### MS-DOS AND ITS MAIN TERMS

#### What is MS-DOS

The Microsoft MS-DOS *operating system* is like a translator between you and your computer. The programmes in this operating system allow you communicate with your computer, your disk drives and your printer, letting you use these resources to your advantage.

MS-DOS also helps you to manage programmes and data. Once you have loaded MS-DOS into your computer's memory, you can compose letters and reports, run programmes and languages such as Microsoft GW-BASIC, and use devices such as printers and disk drives.

#### Terms You Should Know

When you are introduced to a new or different idea, you must often learn a new set of words to understand the idea. The MS-DOS operating system is no exception. The following pages explain some terms you will need to know so that you can read and use the manuals.

##### Programme

Programmes, often called *application programmes*, *applications*, or *software* are series of instructions written in computer languages. These instructions are stored in files and tell your computer to perform a task. For example, a programme might tell your computer to alphabetically sort a list of names. Spreadsheets and word processors are other examples of programmes.

##### File

A file is a collection of related information, like the contents of a file folder in a desk drawer. File folders, for instance, might contain business letters, office memos, or monthly sales data. Files on your disks could also contain letters, memos, or data. For example, your MS-DOS master disk contains more than thirty files. Your other disks may contain files that you've created, or that came with the disk.

##### Filename

Just as each folder in a file cabinet has a label, each file on a disk has a name. This name has two parts: a *filename* and an *extension*. A filename can be from one to eight characters in length, and can be typed in uppercase or lowercase letters. MS-DOS automatically converts filenames to uppercase letters.

Filename extensions consist of a period followed by one, two, or three characters. Extensions are optional, but it's good idea to use them, since they are useful for describing the contents of a file to you and to MS-DOS. For instance, if you want to be able to quickly identify your report files, you can add the filename extension *rpt* to each one. Here's an example of a filename with this extension.

progress .rpt

*filename filename extension*

#### Directory

A directory is a table of contents for a disk. It contains the names of your files, their sizes, and the dates they were last modified.

#### Volume Label

When you use a new disk, you can put a label on the outside of it to help you identify its contents. You can also give each of your disks an internal name, called a *volume label*.

You can look at the volume label on a disk by displaying its directory. Some programmes may look at the volume label to see if you are using the correct disk. So make sure that you label your disks.

#### Disk Drive

To use the files or programmes that are on a floppy disk, you must first insert the disk into a floppy disk drive. Floppy disk drives are commonly referred to as the A drive and the B drive. A hard disk drive, normally installed inside your computer, is usually referred to as the C drive.

#### Drive Name

A complete *drive name* consists of a *drive letter* and a *colon*. When using a command, you may need to type a drive name before your filename to tell MS-DOS where to find the disk that contains your file. For example, suppose you have a file named *finances.doc* on the disk in drive B. To tell MS-DOS where to find this file you would type the drive name before the filename:

b: finances.doc

drive name filename with extension

## Command

Just as you will run programmes to create and update files containing your data, you will also need to run some special programmes, called MS-DOS commands, that let you work with entire files.

When you type MS-DOS commands, you are asking the computer to perform tasks. For example, when you use the diskcopy command to copy your MS-DOS master disk, you are using a file named *diskcopy.exe*, whose task is to copy the files on the MS-DOS disk.

## Error messages

If you or your computer makes a mistake when using a device or MS-DOS command, MS-DOS displays an appropriate *error message*. Error messages apply to general errors (such as misspelling a command) or to device errors (such as trying to use a printer that is out of paper).

## Memory

*Memory* is the place in your computer where information is actively used. When you run a programme, MS-DOS stores that programme and the files it uses in the computer's available memory. Some programmes and files use more memory than others, depending on how large and complex they are.

## Devices

Whenever you use your computer, you supply the information (input) and expect a result (output). Your computer uses pieces of hardware called *devices* to receive input and send output.

For example, when you type a command, your computer receives input from your keyboard and disk drive, and usually sends output to your screen. It can also receive input from a mouse, or send output to a printer. Some devices, such as disk drives, perform both input and output.

## Device Names

*Device names* are special names given to each device that your computer "knows" about. An example of a device name is LPT1, which stands for the first parallel lineprinter connected to your computer.

When you add a new device, such as a mouse, to your computer, you sometimes need to tell MS-DOS about it by setting up (configuring) your computer for that device.

## ASSIGNMENT TO TEXT 5.

### I. Read and translate the text.

### II. Answer the questions to the above text

1. What is MS-DOS? 2. What do the programmes in the system allow to do? 3. What is a programme? 4. What is a file? 5. What can files contain? 6. What is a file name? 7. What are filename extensions for? 8. What is a directory? 9. Why should we give a disk a volume label? 10. What drives do you know? 11. What commands are for? 12. What is memory used for? 13. What devices do you know?

### III. Give English equivalents:

расширение, метка тома, программное обеспечение, загружать в память, операционная система, дисковод, сообщение об ошибке, имя файла, клавиатура, устройство, ввод информации, вывод информации, создавать файл, выполнять программу, мышь.

### IV. Match up:

operating .....	a task
disk .....	label
to manage .....	contents
application .....	disk
to perform .....	system
to describe .....	programmes and data
volume .....	files
floppy .....	programs
hard .....	computer
to update .....	programme
to run .....	drives
to configure .....	disk drive

### V. Pick out the right definition:

- |                     |   |
|---------------------|---|
| 1. Operating system | a) allows to communicate with computer and other devices;<br>b) a table of contents for the disk;<br>c) is a disk copy command. |
| 2. Device           | a) a disk drive;<br>b) a collection of related information;<br>c) a piece of hardware.  |

- |                  |   |
|------------------|---|
| 3. Programme     | a) a place where information is stored;<br>b) instructions written in computer language;<br>c) devices to perform commands. |
| 4). File         | a) software;<br>b) error message;<br>c) collection of related information.  |
| 5). Volume label | a) internal name of disk;<br>b) device name;<br>c) filename.  |

#### VI. Finish answering the questions:

1. What does MS-DOS allow to do? - It allows ... .
2. What can you do if you load MS-DOS into your computer? - If you load MS-DOS into your computer you ... .
3. What are the synonyms of application programme? - They are ....
4. What do files contain? - They ... .
5. How many letters do filenames consist of? - They ... .
6. How can an extension describe the contents of a file? - You can ....
7. Is an internal name of a disk called a volume label or a drive name? – It's ... .
8. Is A drive meant for a floppy or a compact disk? – It's .... .

#### VII. Find the correct answer:

1. What do you have to do to find the file you need?
  - a) To type a drive name.
  - b) To give a device name.
  - c) To give a filename extension.
2. Where is information stored?
  - a) In the programme.
  - b) In the disk drive.
  - c) In the memory.
3. What devices can serve as input?
  - a) A printer.
  - b) A mouse.
  - c) A screen.

#### VIII. Fill in the blanks:

volume label, files, device names, spreadsheets and word processors. a directory, uppercase or lowercase letters, floppy disk drive, programmes and data, a drive letter and a colon, optional.

1. MS-DOS also helps you to manage ... .
2. ... are other examples of programs.
3. ... on your disks could also contain letters, memos, or data.
4. A filename can be from one to eight characters in length, and can be typed in ... .
5. Extensions are ... , but it's good idea to use them, since they are useful for describing the contents of a file to you and to MS-DOS.
6. ... contains the names of your files, their sizes, and the dates they were last modified.
7. You can look at the ... on a disk by displaying its directory.
8. To use the files or programs that are on a floppy disk, you must first insert the disk into a ... .
9. A complete drive name consists of ... .
- 10.... are special names given to each device that your computer "knows" about.

#### IX. Translate:

1. The programmes in this operating system allow you communicate with your computer, your disk drives and your printer, letting you use these resources to your advantage.
2. MS-DOS also helps you to manage programs and data.
3. Filename extensions consist of a period followed by one, two, or three characters.
4. Floppy disk drives are commonly referred to as the A drive and the B drive.
5. If you or your computer makes a mistake when using a device or MS-DOS command, MS-DOS displays an appropriate error message.

#### X. Translate:

1. Примером может служить устройство под названием LPT1, которое расшифровывается как построчный принтер.
2. Некоторые программы и файлы используют больший объем памяти, в зависимости от их размера и сложности.
3. Когда вы печатаете команды MS-DOS, вы просите компьютер выполнить команды.

4. Использование расширений не является обязательным, но их рекомендуется применять для описания содержимого файла.

5. Жесткий диск, который установлен в вашем компьютере, обычно находится под литерой С.

## **XI. Give summary of the text.**

### **TEXT 6 WINDOWS**

Microsoft Windows (or simply Windows) is a software programme that makes your IBM PC (or compatible) easy to use. It does this by simplifying the computer's *user interface*.

The word *interface* refers to the way you give your computer commands, the way you interact with it.

Usually the interface between you and the computer consists of the screen and the keyboard, you interact with the computer by responding to what's on the screen, typing in commands at the DOS command line to do your work.

DOS often isn't very intelligent at interpreting your commands and most people consider it awkward or intimidating as a user interface. These commands can be confusing and difficult to remember. Who wants to learn lots of computer commands just to see what's on your disk, copy a file, or format a disk?

Windows changes much of this. What's been missing from the PC is a programme that makes the computer easy to use. Windows is just such a program. With Windows, you can run programmes, enter and move data around, and perform DOS-related tasks simply by using the *mouse* to point at objects on the screen. Of course, you also use the keyboard to type in letters and numbers.

Windows interprets your actions and tells DOS and your computer what to do.

In addition to making DOS housekeeping tasks such as creating directories, copying files, deleting files, formatting disks, and so forth, easier, Windows makes running your favorite *applications* easier, too. (An application is a software package that you use for a specific task, such as word processing).

Windows owes its name to the fact that it runs each programme or document in its own separate *window*. (A window is a box or frame on the screen.) You can have numerous windows on the screen at a time,

each containing its own programme and/or document. You can then easily switch between programs without having to close one down and open the next.

Another feature is that Windows has a facility - called the Clipboard - that lets you copy material between dissimilar document types, making it easy to *cut* and *paste* information from, say, a spreadsheet into a company report or put a scanned photograph of a house into a real estate brochure. In essence, Windows provides the means for seamlessly joining the capabilities of very different application programs. Not only can you paste portions of one document into another, but by utilizing more advanced document-linking features those pasted elements remain "live". That is, if the source document (such as some spreadsheet data) changes, the results will also be reflected in the secondary document containing the pasted data.

As more and more application programmes are written to run with Windows, it'll be easier for anyone to learn how to use new programmes. This is because all application programmes that run in Windows use similar commands and procedures.

Windows comes supplied with a few of its own handy programmes. There's a word-processing programme called Write, a drawing programme called Paintbrush, a communications programme called Terminal for connecting to outside information services over phone lines, small utility programmes that are helpful for keeping track of appointments and notes, a couple of games to help you escape from your work, and a few others.

Years of research went into developing the prototype of today's popular graphical user interfaces. It was shown in the early 1980s that the graphical user interface, in conjunction with a hand-held pointing device (now called the mouse), was much easier to operate and understand than the older-style keyboard-command approach to controlling a computer. A little-known fact is that this research was conducted by the Xerox Corporation and first resulted in the Xerox Star computer before IBM PCs or Macintoshes existed. It wasn't until later that the technology was adapted by Apple Computer for its Macintosh prototype, the Lisa.



## ASSIGNMENT TO TEXT 6.

### I. Read and translate the text.

### II. Answer the questions to the above text

1. What are the advantages of Windows? 2. What is Windows? 3. Why do we call it Windows? 4. What is another feature of Windows? 5. What firm was the first to have some results developing the prototype of Windows?

### III. Make all types of questions to the following sentence:

windows interprets your actions and tells DOS and your computer what to do.

### IV. Give English equivalents:

программное обеспечение, пользовательский интерфейс, печатать команды, быть легким в использовании, выполнять программу, приложение, многочисленный, закрыть программу, различный (разнородный), вставлять, обслуживающая программа (утилита).

### V. Write out five sentences with Present Simple and translate them.

### VI. Match up:

software.....	with computer
user.....	information
to interact .....	programme
to make the computer.....	disk
to delete .....	programme
to format.....	easy to use
to paste .....	interface
utility .....	files

### VII. Pick out the right definition:

- |                   |  |
|-------------------|--|
| 1. User interface | a) a software package;<br>b) commands given to computer;<br>c) document-linking features.  |
| 2. Application    | a) pasted data;<br>b) a device name;<br>c) a software package for a specific task.         |
| 3. To paste       | a) to copy dissimilar document types;<br>b) to run a command;<br>c) to create a directoryЖ |

4. A window

- a) a command line;
- b) a box or frame on the screen;
- c) a seamless joining of different programmes.

5. Paintbrush

- a) a word processing programme;
- b) a communication programme;
- c) a drawing programme.

### VIII. Finish answering the questions:

1. What is the user interface for? – It's meant for ... .
2. How do the user and the computer interact? – They interact with ... .
3. What is the mouse for? – It's meant for ... .
4. What does Windows owe its name to? – It owes ... .
5. What do words "cut" and "paste" mean? – They mean ... .
6. What handy programmes supplied by Windows do you know? – They are ...
7. Was Xerox or Macintosh the first to produce the mouse? – It ...

### IX. Put the words in brackets in the correct order:

1. supplied with/its own/programmes/a few of/comes/ handy/ Windows.
2. open the next/one down/between/programmes /switch/without having to close/ then/easily/can/and/you.
3. document/runs/that/its name/separate/it/owes/each program/or/ Windows /in its own/to the fact/ window.

### X. Fill in the blanks:

Write, on the screen, handy programmes, seamlessly joining, applications, user interface, interprets.

1. ... is an instrument to simplify the usage of your computer.
2. Windows ... your actions and tells DOS and your computer what to do.
3. Windows makes running your favorite ... easier
4. You can have numerous windows ... at a time, each containing its own programme.
5. Windows provides the means for ... the capabilities of very different application programmes.
6. Windows comes supplied with a few of its own ... .
7. Windows has got a word processing programme called ... .

### **XI. Translate:**

1. Microsoft Windows (or simply Windows) is a software programme that makes your IBM PC (or compatible) easy to use by simplifying the computer's user interface.
2. DOS often isn't very intelligent at interpreting your commands and most people consider it awkward or intimidating as a user interface.
3. You can then easily switch between programmes without having to close one down and open the next.
4. As more and more application programmes are written to run with Windows, it'll be easier for anyone to learn how to use new programmes.

### **XII. Translate:**

1. Слово интерфейс означает каким образом вы даете команды компьютеру, как вы взаимодействуете с ним.
2. При помощи Windows вы запускаете программы, вносите и меняете данные, выполняете операции в DOS при помощи мыши, указывая ею на объекты на мониторе.
3. Программа названа Windows, потому что каждая программа или документ имеют собственное окно.
4. Windows обеспечивает совместимость возможностей различных прикладных программ.
5. Мало известный факт состоит в том, что эти исследования проводились компанией Ксерокс и завершились появлением компьютера Xerox Star до появления компьютеров от IBM и Macintosh.

### **XIII. Give summary of the text.**

#### **TEXT 7**

##### **Computers Concern You**

When Ch. Babbage, a professor of mathematics at Cambridge University, invented the first calculating machine in 1812, he could hardly have imagined the situations we find ourselves in today. Almost everything in modern world is done with the help of computers - the complicated descendants of his simple machine. Computers are being used more and more extensively in the world today, for the simple reason that they are far more efficient than human beings. They have much better memories and can store great amount of information and they can do

calculations in a fraction of the time required by a human mathematician. No man alive can do 500,000 sums in one second, but a modern computer can.

In fact, computers can do many things we do, but faster and better. They can control machines at factories, work out tomorrow's weather and even play chess, write poetry or compose music. Let's look now at some of the ways in which computers concern people in their daily lives and work.

Many people associate computers with the world of science and mathematics, but they are also a great help to scholars in other subjects: in history, literature and so on. It is now possible for a scholar to find a book or an article he needs very quickly, when a million or more new books are published each year, which is quite an advantage. You tell the computer which subject you are interested in and it produces any microfiche you need in seconds.

There are also systems which are being developed to translate articles from foreign magazines by computer and to make up many lists of information which are needed in a modern library. So, computer can help us to deal with the knowledge explosion in many ways. One can imagine a time when libraries will be run by computers, without human beings at all.

Or, let's take another example. When a man drives a car for long distances he has two problems: to keep the car at a constant speed and watch that he does not run into the car in front of him. Engineers are now experimenting with a system which has a computer control of these two problems. The car's computer keeps the speed constant. At the same time the distance between the car and any other car in front of it is measured by a beam of light transmitted forwards. The beam meets the rear reflectors of the car in front and it is reflected back, which enables to measure the distance. This information is fed to the computer which adjusts its speed control accordingly.

#### **ASSIGNMENT TO TEXT 7**

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

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

1. What did Ch. Babbage invent in 1812? 2. Why are computers extensively used nowadays? 3. In what ways do computers help people in their everyday life?

##### **III. Make all types of questions to the following sentence:**

engineers are now experimenting with a system which has a computer

control of these two problems.

**IV. Give English equivalents:**

счетная машина, эффективный, запоминать, мгновение, связывать с, преимущество, интересоваться, бурный рост знаний, постоянный, замерять расстояние.

**V. Give Russian equivalents:**

to be used extensively, great amount of information, scholar, to be developed, to be run, to keep constant, a beam of light, to be fed.

**VI. Write out five sentences with the Passive Voice and translate them.**

**VII. Match up:**

to enable .....the knowledge explosion  
calculating.....the speed constant  
complicated ..... by computers  
to store .....machine  
to do ..... descendants  
to deal with..... to measure  
to be run .....calculations  
to keep ..... great amount of information

**VIII. Put the verbs into the correct tense form and find the correct answer to the questions:**

1. When (to invent) Ch. Babbage the first calculating machine?
  - a) In 1912.
  - b) In 1812.
  - c) In 1712.
2. What (to be) done with the help of computers?
  - a) Almost nothing.
  - b) Almost something.
  - c) Almost everything.
3. What (can) computers do better?
  - a) Read and write.
  - b) Store information and do calculations.
  - c) Understand and solve problems.
4. What systems (to be developed) nowadays?
  - a) To translate articles from foreign magazines.
  - b) To read articles from foreign magazines.
  - c) To write articles in foreign magazines.

**5. How (can) a computer help the driver?**

- a) To keep the driver awake.
- b) To control the speed and the distance.
- c) To help the driver have a rest.

**IX. Fill in the blanks:**

being developed, calculations, more and more extensively, associate, advantage.

1. It is an ... to find a book nowadays when there are millions of them published every year.
2. Computers are being used ... in the world today.
3. They can do ... in a fraction of the time required by a human mathematician.
4. Many people ... computers with the world of science and mathematics.
5. There are also systems which are ... to translate articles from foreign magazines by computer.

**X. Translate:**

1. When Ch. Babbage, a professor of mathematics at Cambridge University, invented the first calculating machine in 1812, he could hardly have imagined the situations we find ourselves in today.
2. They can control machines at factories, work out tomorrow's weather and even play chess, write poetry or compose music.
3. Computer can help us to deal with the knowledge explosion in many ways.
4. Engineers are now experimenting with a system which has a computer control of these two problems.
5. Engineers are now experimenting with a system which has a computer control of these two problems.

**XI. Translate:**

1. Почти все в современном мире совершается при помощи компьютеров.
2. Фактически, компьютеры могут делать многое из того, что делаем мы, но быстрее и лучше.
3. Можно представить время, когда библиотеки будут управляться компьютерами без участия человека.

4. Когда человек долго ведет машину, возникают две проблемы: поддерживать постоянную скорость и избегать столкновения с впереди идущим автомобилем.

5. Эта информация передается на компьютер, который контролирует скорость.

## XII. Give summary of the above text.

### TEXT 8

Sir Isaac Newton was a supergenius of science who among other things invented calculus, stated the laws of gravity and optics. But it turned out Newton also made mistakes. The University of Chicago announced recently that R. Garusto, 23, a physicist, had discovered in one of Newton's calculations an error that had been undetected for three centuries.

The young scientist discovered it while he was studying Newton's masterpiece of physics «Principia» (1687). Newton had derived a figure for the Earth's mass based on his new theory that a single force - gravity - governed falling bodies on the Earth and the motion of planets around the Sun. The calculation depended on the angle between two lines from the Earth to the Sun, but because that angle was not exactly known at the time, Newton used slightly different figures in «Principia». It was that mistake that the young scientist found, was soon confirmed by other physicists. The mistake has no influence on Newton's theory, but its discovery was enough to get him a prize from the University of Chicago.

#### I. Answer the following questions:

1. What is Sir Isaac Newton famous for? 2. What had R. Garusto discovered? 3. What mistake did Newton make? 4. Has the mistake any influence on Newton's theory?

#### II. Translate the text

#### III. Read the following computer terms, give their Russian equivalents and translate the sentences.

1. **Hardware** means the different types of equipment a computer consists of.

2. A computer's hardware comprises a **central processing unit (CPU)** which is the heart and brain of the computer.

3. **Input and output devices** capable of putting information into a computer and getting it out of it are types of peripheral equipment. **Peripherals** are the units connected to the CPU: input devices,

output devices and storage devices.

4. The simplest and most common type of input device is a keyboard, containing a typewriter **keyboard**.

5. A **laser printer** is a kind of output device to print information.

6. **Software** means the programmes needed to operate computer equipment.

7. These programmes are on **disks**, the **hard disks** inside the computer, or **floppy disks**, or on **CD-ROMs**, that is, Compact Disk Read Only Memory, which you can put on or store a large amount of information. A **disk** is a storage device made of flat circular plates with magnetizable surfaces. A **hard disk** is a disk made from a solid magnetic material and used as a storage device. A **floppy disk** (also called diskette) is a disk made of flexible plastic material upon which data are stored on magnetic tracks. **Tracks** are areas marked on the surface of a disk. A **disk drive** is the electronic mechanism that actually reads what is on a disk. In hard disks, the disk and the drive are built into a single unit.

8. A **word processor** is a computer used to write documents, letters and reports, or the software that is used for this purpose.

9. **Databases** are programmes, which allow you to store, look at or change a large quantity of information quickly and easily.

10. **Graphics** are pictures and symbols a computer program can produce.

11. An extra copy on a floppy disk is called a **back-up copy**, a copy of data or software, usually kept in case the original disk is damaged or destroyed.

12. A **bug** possible in a computer operation, also a virus is a software problem or error in a program. **Debugging** means correcting programme errors or bugs.

13. People send **e-mail** (electronic mail) messages with the help of the **Internet**, a system that lets computers connect by telephone lines.

A **laptop** is a portable computer weighing about 2-4 kg.

14. With a device called the **mouse** you can do a number of things by **clicking** on different **icons**.

15. A **mouse** is a small input device, on the top of which there are one or more buttons for communicating with the computer.

16. **Clicking** is a basic mouse action to place a cursor to close a window, etc.

17. An **icon** is a small picture representing an object, process or function.

## TEXT 9

### GATEWAY 2000

#### The Main Part of the System

There are many hardware pieces in a computer system. Some are: the system board, power supply, keyboard, mouse, hard drive, monitor and the video card and its drivers.

#### The case

The large metal box that is the main part of the computer is called the case. The case and its contents (power supply, system board, etc.) are called the system unit. The case has several functions:

- Protects the delicate electronics inside.
- Keeps electromagnetic emissions inside so your TV, cordless phone, and stereo don't go haywire when you power up the computer.
- Can also hold the monitor.

Don't remove the case's cover unless you need to do something inside the unit, and always replace the cover when you are done.

#### The keyboard

You communicate with your computer with the keyboard. With it, you type instructions and commands for the computer, and information to be processed and stored. Many of the keys on the keyboard are like those on a typewriter: letter keys, punctuation keys, shift keys, tab and the spacebar. Your keyboard also has many specialized keys.

The instruction manuals for most software applications contain a section describing the functions of each key or combination of keys.

#### The mouse

The mouse works by sliding it around (ball down) on a flat surface. The mouse does not work if you hold it in the air like a remote control. The desktop is fine, but a ready-made mouse pad is the best surface to roll the mouse on. Its surface is flat and usually somewhat textured. If a surface is too smooth or rough, the ball inside can slip. As you glide the mouse, the ball inside moves in the direction of your movement. You will see the arrow on your screen moving in unison. The arrow is called a pointer, and the most important part is the very tip of its point. That's

the only part the computer pays attention to. To use the mouse, slide it on the mousepad until the pointer's point is on something, like a button or an icon. Then:

**Click** - position the mouse pointer over an element and press and release the left mouse button one time.

**Double-click** - same as above except press the mouse button twice in quick succession *without moving the mouse between clicks*. It may take a little practice to not twitch the mouse when you first start double-clicking. Usually you double-click on an icon to start the program.

**Drag** - position the mouse pointer over an element, press and hold the left mouse button, and drag the mouse across the screen. The pointer moves, dragging the element. At the desired location, release the mouse button. The pointer lets go of whatever it was dragging.

An excellent way to practice using the mouse is to play the Solitaire game that comes with Windows.

#### The monitor

Your computer is not complete without the monitor, a TV-like device that usually sits on top of the computer. The monitor displays text characters and graphics. It allows you to see the results of the work going on inside your system unit. The image that you see is made up of tiny dots called *pixels*. The sharpness of the picture depends on the number and size of these pixels. The more pixels, the sharper the image. This is called *resolution*.

A display adapter card is actually what builds the video images; the monitor simply displays them. The display adapter for your system is either built onto the system board or is an expansion card plugged into your system board.

If you sit in front of a monitor for long periods of time, eye strain can be reduced if you follow a few guidelines:

- Use the computer in a room with even lighting. Adjust the controls on the monitor to vary the contrast and brightness of the display to suit the lighting in the room.
- Keep the screen clean.
- Adjust your chair so that you are looking down at the screen at a slight angle.
- Turn the monitor away from windows and bright lights to avoid

glare.

Some of the controls on the monitor change the size and position of the image. You should set them for the largest image without losing any part of it.

You can set a *screen saver* to appear on your monitor screen if the computer sits idle for a period of time. Screen savers can reduce wear on your screen. Windows includes a number of screen savers.

### The floppy drive

Floppy drives provide a way to pass files to and from the hard drive or to and from another computer. At Gateway 2000, we install either of two types of floppy disk drives:

- 3.5-inch 1.44MB drives, usually drive A;
- Combo drives (includes both a 3.5-inch 1.44MB drive and a 5.25-inch 1.2MB drive, called drive A: and drive B: respectively).

The drives can read and write on floppy diskettes. If you put a brand new diskette into the drive, the computer cannot read it. You have to format it first.

### The hard drive

Unlike the floppy drive, the hard disk drive is inside the computer's case and you cannot see it. Usually it is referred to as drive C:. Hard drives also hold a lot of data. The smallest hard drives Gateway 2000 offers hold more information than 100 floppies! The size of a hard drive is measured in megabytes, or MB for short.

### The CD-ROM drive

The CD-ROM drive installed in your Gateway 2000 computer is similar to the one(s) you might have in your home or car. It can play music CDs as well as read software program CDs and the new Kodak photo CDs.

The amount and variety of material you can access with CD-ROM is amazing, particularly when you realize that a CD disc holds over 600MB of data! As far as your computer is concerned, the CD-ROM is just another hard drive, except that, although you can read from it, you can't save anything to it.

To operate the drive, press the Eject button to open the tray. Put a CD in the tray (label side UP!) and gently start to push the tray in. The motor takes over and pulls the tray the rest of the way in.

You can play ordinary music CDs if your system has speakers or if you plug earphones into the jack in the front of the drive.

### NOTES TO THE TEXT:

<sup>1</sup> **video card** - видеокарта

<sup>2</sup> **display adapter card** - видеоадаптер (системное плато, генерирующее сигналы для получения изображения на мониторе)

### ASSIGNMENT TO TEXT 9.

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

#### II. Answer the following questions:

1. What are the elements of hardware? 2. What is called the system unit? 3. What are the functions of the case? 4. What is the keyboard used for? 5. How does the keyboard function? 6. How does the mouse work? 7. What do you have to do with the mouse if you want to start the programme? 8. What is dragging for? 9. What is the monitor for? 10. What does the sharpness depend on and how is it called? 11. How are video images built? 12. What regulations do you have to follow to reduce eye strain? 13. What is used to reduce wear on the screen? 14. What is the function of the floppy drive? 15. Why does the computer have to format a new diskette? 16. Where is hard drive situated and how is it referred to? 17. What is the CD-rom for?

#### III. Make all types of questions to the following sentence:

you communicate with your computer with the keyboard.

#### IV. Give English equivalents:

технические средства («железо»), корпус, обрабатывать (информацию), клавиша пробела, дистанционное управление, перетаскивание, состоять из, хранитель экрана, совершенно новая дискета, устанавливать.

#### V. Give Russian equivalents:

power supply, to go haywire, specialized key, mouse pad, pointer, text characters, eye strain, to reduce wear, hard disk drive, software, to save, tray, earphones.

#### V. Write out five sentences with Present Simple and translate them.

## VI. Match up:

power ..... guidelines  
system ..... the computer  
to power up ..... attention to  
information to be ..... device  
instruction ..... in megabytes  
ready-made ..... into the jack  
to pay ..... unit  
TV-like ..... processed and stored  
to follow ..... supply  
to be measured ..... manuals  
to plug earphones ..... mouse pad

## VII. Put the verbs into the correct tense form:

1. One of the functions of the case (to be) to keep electromagnetic emissions inside when you power up the computer.
2. The function of each key (to be) described in the instruction manual.
3. Why it (to be) better to use a mouse pad?
4. Text characters and graphics (to be) displayed on the monitor.
5. Number and size of pixels (to affect) the sharpness of the picture.
6. Screen savers (to help) to reduce wear on the screen.
7. Quite often the hard drive (to be) called drive C:.
8. You (can) read from CD-ROM, but you (not can) save anything to it.

## VIII. Fill in the blanks:

to format, to reduce eye strain, specialized keys, to plug earphones, resolution, data, to press the Eject button.

1. If you want to listen to a music CD you can ... into the jack.
2. When you want to operate the drive, you must ... to open the tray.
3. Hard drives usually contain a lot of ...

4. Before placing a brand new diskette into the drive you have to ... it first.

5. To ... turn the monitor away from the windows and bright lights.

6. ... depends on the number of pixels.

7. A keyboard has got many ...

## IX. Translate:

1. Don't remove the case's cover unless you need to do something inside the unit, and always replace the cover when you are done.

2. With a keyboard, you type instructions and commands for the computer, and information to be processed and stored.

3. You will see the arrow on your screen moving in unison.

4. The pointer moves, dragging the element.

5. The image that you see is made up of tiny dots called *pixels*.

6. Floppy drives provide a way to pass files to and from the hard drive or to and from another computer.

## X. Translate:

1. Для уменьшения нагрузки на глаза пользуйтесь компьютером в комнате с ровным освещением.

2. Корпус с его содержимым называется системным блоком.

3. Монитор позволяет вам видеть результат работы, проходящий внутри системного блока.

4. Мышь работает благодаря скольжению по ровной поверхности.

5. CD-ROM фактически является еще одним жестким диском.

## XI. Give summary of the above text.

### TEXT 10

A computer for scuba divers will provide in one device information about time, depth and air supply. It is to be used together with special divers' tables. A display will provide visual information and audible warnings about critical conditions.

If a diver wants to know an accurate depth he is down, he must set water type he is in. If he is in the sea, he will set «sea water», otherwise he will set «fresh water». The device shows the diver's current depth in meters and the level of power left in the batteries. It will indicate if the level is low, medium or high.

If a diver wants to know how long he has been down, he can see this from the display. If a diver needs to spend some minutes at a certain depth for decompression, he will start his stop watch, and will wait until the time has elapsed (passed). If a diver wants to know the amount of air left in the tank, he can see this from the contents display.

A warning signal tells him when he must start his ascent. Before he descends, the diver sets the time to ascend. If he began his ascent before the display started flashing, he would be within safe limits. If he did not ascend then, he would expose himself to decompression sickness. If he started his ascent and went up too quickly, he would see a warning light «Too fast». Then he should slow down his ascent.

### **ASSIGNMENT TO TEXT 10.**

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

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

1. What will a computer for scuba divers provide? 2. What will a display provide? 3. How will the diver estimate the depth? 4. How will the diver know the amount of air in the tank? 5. In what case will the diver expose himself to decompression sickness?

#### **III. Make all types of questions to the following sentence:**

a computer for scuba divers will provide in one device information about time, depth and air supply.

#### **IV. Give Russian equivalents:**

display, visual information, audible warning, fresh water, current depth, to be down, stop watch, warning signal, ascent, descent, be within safe limits.

#### **V. Write out sentences with subordinate clauses of condition and translate them.**

#### **VI. Give summary of the above text.**

### **TEXT 11**

#### **Optical Technology**

One of the most interesting developments in telecommunication is the rapid progress of optical communication where optical fibers are replacing conventional telephone wires and cables. Just as digital technologies greatly improved the telephone system, optical communication promises a considerable increase in capacity, quality, performance and reliability of the

global telecommunication network. New technologies such as optical fibers will increase the speed of telecommunication and provide new, specialized information service. Voice, computer data, even video images, will be increasingly integrated into a single digital communication network capable of processing and transmitting virtually any kind of information.

It is a result of combining two technologies: the laser, first demonstrated in 1960, and the fabrication 10 years later of ultra-thin silicon fibres which can serve as lightwave conductors. With the further development of very efficient lasers plus continually improved techniques to produce thin silica fibres of incredible transparency, optical systems can transmit pulses of light as far as 135 kilometers without the need for amplification or regeneration.

At present high-capacity optical transmission systems are being installed between many major US cities at a rapid rate. The system most widely used now operates at 147 megabits per second and accommodates 6,000 circuits over a single pair of glass fibres (one for each direction of transmission). This system will soon be improved to operate at 1.7 gigabits per second and handle 24,000 telephone channels simultaneously.

A revolution in information storage is underway with optical disk technology.

The first digital optical disks were produced in 1982 as compact disks for music. They were further developed as a storage medium for computers. The disks are made of plastics coated with aluminium. The information is recorded by using a powerful laser to imprint bubbles on the surface of the disk. A less powerful laser reads back the pictures, sound or information. An optical disk is almost indestructible and can store about 1000 times more information than a plastic disk of the same size.

One CD-ROM disk (650 MB) can replace 300,000 pages of text (about 500 floppies), which represents a lot of savings in databases.

The future of optical storage is called DVD (digital versatile disk). A DVD-ROM can hold up to 17 GB, about 25 times an ordinary CD-ROM. For this reason, it can store a large amount of multimedia software and complete full-screen Hollywood movies in different languages. However, DVD-ROMs are «read-only» devices. To avoid this limitation, companies also produce DVD rewritable drives.

Besides, it is reported that an optical equivalent of a transistor has been produced and intensive research on optical electronic computers is underway at a number of US companies as well as in countries around the world.



It is found that optical technology is cost-effective and versatile. It finds new applications every day - from connecting communication equipment or computers within the same building or room to long-distance transcontinental, transoceanic and space communications.

### ASSIGNMENT TO TEXT 11.

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

#### II. Answer the following questions:

1. Which is one of the most interesting developments in telecommunication nowadays? 2. What does optical communication promise? 3. What are the capabilities of optical fibers? 4. What are the perspectives of optical fibers? 5. Why is the system developing rapidly now? 6. What are the advantages of using compact discs? 7. How much information can a DVD-ROM hold? 8. Where can optical technology be used?

#### III. Make all types of questions to the following sentence:

the first digital optical disks were produced in 1982 as compact disks for music.

#### IV. Give English equivalents:

обычные телефонные провода и кабели, цифровые технологии, надежность, объединять в одно целое, проводник световых волн, усиление, устанавливать, развивать, представлять собой, оптико-электронный компьютер, рентабельный,

#### V. Give Russian equivalents:

capacity, computer data, transmitting information, ultra-thin silicon fibres, incredible transparency, regeneration, optical disk technology, coated, database, multimedia software, rewritable drive, cost-effective, application.

#### VI. Match up:

optical .....conductors  
conventional ..... bubbles  
silicon..... medium  
lightwave ..... communication  
storage ..... software  
to imprint ..... telephone wires and cables  
multimedia..... fibres

#### VII. Put the verbs into the correct tense form:

- In the nearest future digital communication network (to allow) to process and transmit voice, computer data and video images.
- Invention of the laser and thin silicon fibres (to make) it possible to transmit pulses of light without amplification and regeneration.
- New high-capacity optical transmission systems (to operate) between many major US cities.
- Another revolution (to concern) optical disk technology.
- An optical disk (to be) capable of storing about 1000 times more information than a plastic disk of the same size.

#### VIII. Fill in the blanks:

1.7 gigabits, digital communication network, cost-effective and versatile, high-capacity optical transmission systems, transistor, digital technologies, coated, information storage.

- Just as ... greatly improved the telephone system, optical communication promises a considerable increase in capacity, quality, performance and reliability.
- Voice, computer data, even video images, will be increasingly integrated into a single ... .
- At present ... are being installed between many major US cities at a rapid rate.
- This system will soon be improved to operate at ... per second.
- A revolution in ... is underway with optical disk technology.
- The disks are made of plastics ... with aluminium.
- It is reported that an optical equivalent of a ... has been produced.
- It is found that optical technology is ... .

#### IX. Put in the right proposition:

- You communicate with your computer ... the keyboard.
- The instruction manuals ... most software applications contain a section describing the functions ... each key.
- The mouse works ... sliding it around (ball down) ... a flat surface.
- You will see the arrow ... your screen moving ... unison.
- That's the only part the computer pays attention ... .

6. Your computer is not complete ... the monitor.
7. The sharpness ... the picture depends ... the number and size ... these pixels.
8. Some ... the controls ... the monitor change the size and position ... the image.
9. Windows includes a number ... screen savers.
10. The drives can read and write ... floppy diskettes.
11. The amount and variety ... material you can access ... CD-ROM is amazing.
12. If a diver wants to know an accurate depth he is down, he must set water type he is...
13. If a diver wants to know how long he has been down, he can see this ... the display.
14. Before he descends, the diver sets the time ... ascend.
15. Optical communication promises a considerable increase ... capacity, quality, performance and reliability ... the global telecommunication network.
16. The system most widely used now operates ... 147 megabits (thousand bits) per second.
17. The first digital optical disks were produced ... 1982 as compact disks ... music.
18. The information is recorded ... using a powerful laser to imprint bubbles ... the surface ... the disk.

#### **X. Translate:**

1. Новые технологии, такие как оптические волокна, увеличат скорость связи и предоставят новые услуги по специализированной информации.
2. Последующее развитие высоко эффективных лазеров наряду с постоянным совершенствованием кремниевых волокон невероятной прозрачности позволят передавать пучки света на расстояние 135 км без необходимости усиления или восстановления.
3. Технология оптических дисков представляет собой переворот в области хранения информации.
4. Информация записывается при помощи мощного лазера, оставляющего пузырьки на поверхности диска.
5. Каждый день оптическая технология находит все новые применения от связывания в сеть нескольких компьютеров,

находящихся в одном здании или комнате до межконтинентальной, трансокеанской и космической связи.

#### **XI. Give summary of the above text.**

#### **TEXT 12**

##### **An Encyclopedia on a Tiny Crystal**

Scientists have discovered that a laser beam can be effectively used to record alphanumeric data and sound on crystals. According to Russian researchers a method for recording information on crystals by means of a laser has already been developed, but advanced technologies are needed to make it commercially applicable.

At present researchers are looking for the most suitable chemical compounds to be used as data storages and trying to determine optimum recording conditions. Theoretically, the entire «Great Soviet Encyclopedia» can be recorded on a single tiny crystal.

As far back as 1845, Michael Faraday discovered that a light beam reverses its polarization as it passes through a magnetized crystal. Scientists of our day have used this phenomenon to identify crystalline materials capable of storing information. Lasers have been successfully employed to record information on and read it off.

No ideal data storage crystal has yet been found, but it is obvious now that the future of computer engineering lies in lasers and optoelectronics.

#### **ASSIGNMENT TO TEXT 12.**

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

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

1. What have scientists discovered? 2. What method has been developed according to Russian scientists? 3. What are researchers looking for at present? 4. What did M. Faraday discover long ago and how is the phenomenon used nowadays?

##### **III. Make all types of questions to the following sentence:**

according to Russian researchers a method for recording information on crystals by means of a laser has already been developed.

#### **IV. Give English equivalents:**

луч лазера, буквенно-цифровые данные, передовая технология, химические соединения, наилучшие условия записи, намагниченный, кристаллическое вещество.

#### **V. Give Russian equivalents:**

ideal data storage crystal, commercially applicable, by means of, to record.

#### **VI. Give summary of the above text.**

### **TEXT 13.**

#### **Programming Languages**

The only language computers can understand directly is called machine code. It is known to consist of the 1s and 0s (binary code) that are processed by the CPU. However, machine code as a means of communication is very difficult to write. That is why it is necessary to use symbolic languages that are easier to understand. Then, by using a special programme, these languages can be translated into machine code.

Basic languages, in which the program is similar to the machine code version, are known as low-level languages. In these languages, each instruction is equivalent to a single machine code instruction, and the programme is converted into machine code by a special programme called an assembler. These languages are considered to be still quite complex and restricted to particular computers.

To make the programme easier to write and to overcome the problem of intercommunication between different types of machines, higher-level languages were developed such as BASIC, COBOL, FORTRAN, Pascal, Ada, C and others. A higher-level language is a problem oriented programming language, whereas a low-level language is machine oriented. This means that a high-level language is a convenient and simple means of describing the information structures and sequences of actions to be performed for a particular task.

A high-level language is independent of the architecture of the computer which supports it. This has two advantages. Firstly, the person writing the program does not have to know anything about the computer the programme will be run on. Secondly, programmes are portable, that is, the same programme can (in theory) be run on different types of computers. Programmes written in one of these languages should be

converted by means of a compiler into a lower-level language or machine code so that the CPU could understand it.

C, a high-level programming language, seems to be very popular today because it is small, so it is not too hard to learn, it is very efficient and portable so one can use it with all kinds of computers. A lot of software engineers use C to write commercial applications programmes for mini, micro and personal computers. There are also various versions of C - C++ and Objective C, which represent a new style of programming.

At present there is a tendency towards an even higher level of programming languages, which might be called specification languages, and an increasing use of software development tools.

People communicate instructions to the computer in symbolic languages and the easier this communication can be made, the wider the application of computers will be. Scientists are reported to be already working on Artificial Intelligence and the next generation of computers may be able to understand human languages.

### **ASSIGNMENT TO TEXT 13.**

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

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

1. How is the language that computers understand called? 2. Why is it necessary to use symbolic languages? 3. What is a low-level language? 4. Why aren't they suitable for all computers? 5. How is the programme that converts instructions into machine code called? 6. What are high-level languages called? 7. What is the difference between a low-level and a high-level language? 8. What are the advantages of a high-level language? 9. What is a high-level language converted into machine code with? 10. Why is C, a high-level programming language, most popular nowadays? 11. What is the tendency today? 12. What are scientists working at at present?

#### **III. Make all types of questions to the following sentence:**

there are also various versions of C - C++ and Objective C, which represent a new style of programming.

#### **IV. Give English equivalents:**

искусственный Интеллект, компилирующая программа, машиннонезависимый, язык высокого уровня, ассемблер, язык низкого уровня, средства коммуникации.

### V. Give Russian equivalents:

specification languages, commercial applications programs, efficient and portable, a problem oriented programming language, to be converted, CPU, machine code.

### VI. Match up:

means of ..... into  
a low-level ..... development tools  
to be converted ..... communications  
machine ..... language  
to be run ..... Intelligence  
software ..... oriented  
Artificial ..... on

### VII. Put the verbs into the correct tense form:

- The only language computers understand (to be) machine code.
- Low-level languages (to correspond) to the machine code version.
- Which languages (to be considered) to be complex and restricted to particular computers?
- A compiler (to serve) to convert a high-level language into a lower-level one.
- Usually engineers (to use) C to write commercial applications programmes for mini, micro and personal computers.

### VIII. Fill in the blanks:

compiler, programmed, program, assembler, language, programmers, portable, low-level.

- A computer ... is a set of instructions that tells the computer what to do.
- Most computer ... make a plan of the programme before writing it.
- Coding is the translation of the logical steps into a programming ... .
- In the next century computers will be ... in natural languages like English or French.
- A ... is a special program that converts a programme written in a high-level language into a programme written in a lower level language.
- A special programme called ... converts a program written in a low-level language into machine code.
- If the same programme can be used for different computers, it is

called ....

- In a ... language each instruction has a corresponding machine code equivalent.

### IX. Translate:

- Люди передают компьютеру команды на языке символов поэтому, чем легче такое взаимодействие, тем шире могут быть применены компьютеры.
- В настоящее время существует тенденция к переходу к языкам более высокого уровня, называемым языком спецификаций, а также к использованию инструментов программного обеспечения.
- Многие программисты используют C для написания коммерческих прикладных программ для мини-, макро- и персональных компьютеров.
- Это означает, что язык высокого уровня удобен и прост в описании информационных структур и порядка действий необходимых для выполнения определенного задания.

### X. Give summary of the above text.

#### TEXT 14.

##### The Internet

The Internet is a magnificent global network with millions and millions of computers and people connected to one another where each day people worldwide exchange an immeasurable amount of information, electronic mail, news, resources and, more important, ideas.

It has grown at a surprising rate. Almost everyone has heard about it and an increasing number of people use it regularly. The current estimate is that over 70 million people are connected, in some way, to the Internet - whether they know it or not.

With a few touches at a keyboard a person can get access to materials in almost everywhere. One can have access to full-text newspapers, magazines, journals, reference works, and even books. The Web is one of the best resources for up-to-date information. It is a hypertext-based system by which you can navigate through the Internet. Hypertext is the text that contains links to other documents. A special program known as «browser» can help you find news, pictures, virtual museums, electronic magazines, etc. and print Web pages. You can also click on keywords or buttons that take you to other pages or other Web sites. This is possible because

browsers understand hypertext markup language or code, a set of commands to indicate how a Web page is formatted and displayed.

Internet Video conferencing programmes enable users to talk to and see each other, exchange textual and graphical information, and collaborate.

Internet TV sets allow you to surf the Web and have e-mail while you are watching TV, or vice versa. Imagine watching a film on TV and simultaneously accessing a Web site where you get information on the actors of the film. The next generation of Internet-enabled televisions will incorporate a smart-card for home shopping, banking and other interactive services. Internet-enabled TV means a TV set used as an Internet device.

The Internet is a good example of a wide area network (WAN). For long-distance or worldwide communications computers are usually connected into a wide area network to form a single integrated network. Networks can be linked together by telephone lines or fibre-optic cables. Modern telecommunication systems use fibre-optic cables because they offer considerable advantages. The cables require little physical space, they are safe as they don't carry electricity, and they avoid electromagnetic interference.

Networks on different continents can also be connected via satellites. Computers are connected by means of a modem to ordinary telephone lines or fibre-optic cables, which are linked to a dish aerial. Communication satellites receive and send signals on a transcontinental scale.

## ASSIGNMENT TO TEXT 14.

### I. Read and translate the text.

### II. Answer the following questions:

1. What is the Internet and what is it for? 2. How many people are connected to the Internet at present? 3. What are the advantages of the Internet? 4. How does it function? 5. What other services does the Internet offer? 6. What is an Internet-enabled TV set and how it can be used in the nearest future? 7. What is WAN? 8. How are the networks connected with each other?

### III. Make all types of questions to the following sentence:

the next generation of Internet-enabled televisions will incorporate a smart-card for home shopping, banking and other interactive services.

### IV. Give English equivalents:

параболическая антенна, громадное количество информации, получать доступ, свежая информация, быть связанным, язык гипертекстовой ссылки, глобальная сеть, соединяться посредством (через).

### V. Give Russian equivalents:

magnificent global network reference works, exchange textual and graphical information, smart-card, single integrated network.

### VI. Match up:

dish .....	access
to be connected .....	information
electromagnetic .....	through
worldwide .....	markup language
wide area .....	information
to get ... ..	via
hypertext .....	communications
to navigate .....	interference
up-to-date .....	network
to get .....	aerial

### VII. Put the verbs into the correct tense form:

1. In the last decade the Internet (to grow) at a surprising rate.
2. With the help of the Web you (to be able) to get access to different information resources.
3. Getting access to different sites (to be) done with the help of a special programme known as "browser".
4. In a few years Internet-enabled TV sets (to be) used extensively.
5. What type of cables (to be) telecommunication systems connected with?

### VIII. Fill in the blanks:

exchange textual and graphical information, worldwide communications, be connected via, dish aerial, single integrated network, get access, up-to-date information, smart-card.

1. Computers are connected by means of a modem to ordinary telephone lines or fibre-optic cables, which are linked to a ... .
2. The next generation of Internet-enabled televisions will incorporate a ... for home shopping, banking and other interactive services.

3. Internet Video conferencing programs enable users to talk to and see each other, ..., and collaborate.

4. Networks on different continents can also ... satellites.

5. For long-distance or, ... computers are usually connected into a wide area network to form a ...

6. The Web is one of the best resources for ...

7. With a few touches at a keyboard a person can ... to materials in almost everywhere.

#### **IX. Translate:**

1. The Internet is a magnificent global network with millions and millions of computers and people connected to one another where each day people worldwide exchange an immeasurable amount of information, electronic mail, news, resources and, more important, ideas.

2. Hypertext is the text that contains links to other documents.

3. Internet Video conferencing programs enable users to talk to and see each other, exchange textual and graphical information, and collaborate.

4. The next generation of Internet-enabled televisions will incorporate a smart-card for home shopping, banking and other interactive services.

5. Computers are connected by means of a modem to ordinary telephone lines or fibre-optic cables, which are linked to a dish aerial.

#### **X. Translate:**

1. Почти все о нем слышали и им пользуется все большее число людей.

2. Сеть является одним из лучших источников информации.

3. Сеть основана на системе гипертекстов, при помощи которой можно перемещаться по сети.

4. Интернет представляет собой отличный пример глобальной сети.

5. Компьютеры соединены при помощи модема с телефонными проводами или оптико-волоконными кабелями, которые в свою очередь подключены к параболическим антеннам.

#### **XI. Give summary of the above text.**

### **TEXT 15**

#### **Optical Disks and Drives**

Optical disks can store information at much higher densities than magnetic disks. Thus, they are ideal for multimedia applications where images, animation and sound occupy a lot of disk space. Besides, they are not affected by magnetic fields. This means that they are secure and stable, e.g. they can be transported through airport metal detectors without damaging the data. However, optical drives are slower than hard disks. While there are hard drives with an average access time of 8 milliseconds (ms), most CD-ROM drives have an access time of 150 to 20 ms.

There are various types of optical drives, which have become a reality. CD-ROM systems use optical technology. The data is rewritable using a laser beam. To read CD-ROM disks, you need an optical drive (a CD-ROM player). A typical CD-ROM disk can hold 650 MB (megabytes) of sound, text, photographs, music, multimedia materials and applications. In addition, most CD-ROM drives can be used to play audio CDs. Do you remember that CD stands for compact disk?

Yet CD-ROM technology has one disadvantage. The data on a CD-ROM cannot be changed or «written» to, i.e. it is impossible to add your own material to what is on the disk. It is like a music CD. It is not designed for you to write on, it is designed to hold a lot of information that the user doesn't need to change.

Magneto-optical (MO) drives use both a laser and an electromagnet to record information. Consequently, MO disks are rewritable, that is they can be written to, erased, and then written again. They are available in two formats. Their capacity may be more than 2 GB (gigabyte) or 230 to 640 MB. Such combined devices are good for back up purposes and storage of large amounts of information such as a dictionary or encyclopaedia.

### **ASSIGNMENT TO TEXT 15.**

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

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

1. What can optical disks be used for? 2. What are their advantages and disadvantages? 3. How can data be retrieved from a CD? 4. What are CDs designed for and their disadvantage? 5. What is the other type of disks and what is their capacity?

### III. Make all types of questions to the following sentence:

there are various types of optical drives, which have become a reality.

### IV. Give English equivalents:

оптический диск, сохранять информацию, быть подверженным чему-либо, время доступа, становиться реальностью, обозначать.

### V. Give Russian equivalents:

Rewritable, secure, density, multimedia materials, consequently, optical drives.

### VI. Match up:

to store ..... data  
to be affected ..... for  
to damage ..... information  
to stand ..... purpose  
back up ..... by

### VII. Put the verbs into the correct tense form:

1. Optical disks (to serve) to store information.
2. Airport metal detectors (to damage) the data on the disk?
3. CDs (to hold) 650 MB or 2 GB?
4. How (to be) rewritable disks called?

### VIII. Put in the right proposition:

1. Machine code consist ... the 1s and 0s (binary code) that are processed ... the CPU.
2. Low-level languages are converted ... machine code ... a special program called an assembler.
3. Any high-level language is independent ... the computer the programme will be run ...
4. C, a high-level programming language, can be used ... all kinds of computers.
5. In the Internet millions .. computers are connected ... one another.
6. The Internet is growing ... a surprising rate.
7. Hypertext is the text that contains links ... other documents.
8. To surf in the Internet you can also click ... keywords.
9. Special programmes allow people ... talk ... each other in the Web.
10. Networks can be linked together ... telephone lines or fibre-optic cables.

11. Optical disks are ideal ... multimedia applications.

12. When you pass ... airport metal detectors Optical disks are not affected ... magnetic fields.

13. CDs are not designed ... you ... write ...

### IX. Translate:

1. Это означает, что они защищены и неизменны, т.е. их можно пронести через металло детекторы в аэропорту без повреждения записанных на них информации.

2. Существуют различные типы оптических приводов, которые стали реальностью в наше время.

3. Магнитно-оптические приводы используют лазер и электромагнит для записи информации.

### X. Give summary of the above text.

#### TEXT 16.

#### Computer Graphics

Computer graphics are pictures and drawings produced by computers. A graphics programme interprets the input provided by the user and transports it into images that can be displayed on the screen, printed on paper or transferred to microfilm. In the process the computer uses hundreds of mathematical formulas to convert the bits of data into precise shapes and colours. Graphics can be developed for a variety of uses including illustrations, architectural designs and detailed engineering drawings.

Mechanical engineering uses sophisticated programs for applications in computer-aided design (CAD) and computer-aided manufacturing (CAM). In the car industry CAD software is used to develop, model and test car designs before the actual parts are made. This can save a lot of time and money.

Basically, computer helps users to understand complex information quickly by presenting it in more understandable and clearer visual forms. Electric engineers use computer graphics for designing circuits and in business it is possible to present information as graphics and diagrams. These are certain to be much more effective ways of communicating than lists of figures or long explanations.

Today, three-dimensional graphics along with colour and computer animation are supposed to be essential for graphic design, computer-aided engineering (CAE) and academic research. Computer animation is the

process of creating objects and pictures which move across the screen; it is used by scientists and engineers to analyze problems. With appropriate software they can study the structure of objects and how it is affected by particular changes.

A graphic package is the software that enables the user to draw and manipulate objects on a computer. Each graphic package has its own facilities, as well as a wide range of basic drawing and painting tools. The collection of tools in a package is known as a palette. The basic geometric shapes, such as lines between two points, arcs, circles, polygons, ellipses and even text, making graphical objects are called "primitives". You can choose both the primitive you want and where it should go on the screen. Moreover, you can specify the «attributes» of each primitive, e.g., its colour, line type and so on. The various tools in a palette usually appear together as pop-up icons in a menu. To use one you can activate it by clicking on it.

After specifying the primitives and their attributes you must transform them. Transformation means moving or manipulating the object by translating, rotating and scaling the object.

Translation is moving an object along an axis to somewhere else in the viewing area. Rotation is turning the object larger or smaller in any of the horizontal, vertical or depth direction (corresponding to the x, y and z axis). The term «rendering» describes the techniques used to make your object look real. Rendering includes hidden surface removal, light sources and reflections.

## ASSIGNMENT TO TEXT 16

### I. read and translate the text.

### II. Answer the following questions:

1. What is computer graphics? 2. How does a computer interpret the command? 3. Where is computer graphics used? 4. In what way does computer graphics help people? 5. What is computer animation and how does it help scientists and engineers? 6. What does a graphic package include? 7. What are "primitives" and how can they be used?

### III. Make all types of questions to the following sentence:

A graphics programme interprets the input provided by the user and transports it into images.

### IV. Give English equivalents:

Всплывающая иконка, быть важным, трехмерная графика, зрительные образы, представлять, преобразовывать, компьютерная графика.

### V. Give Russian equivalents:

Graphics program, computer-aided design, computer-aided manufacturing, circuits, to analyze problems, appropriate software, polygon.

### VI. Match up:

pop-up .....	in
to be essential .....	on
three-dimensional .....	a lot of time
visual .....	graphics
to present .....	icons
to convert .....	forms
computer .....	into
to be displayed .....	for
to save.....	graphics

### VII. Write out five sentences with Present Simple and translate the predicate.

### VIII. Pick out the right definition:

- Computer graphics are ... . a) texts; b) pictures and drawings; c) digits.
- Computers use ... to convert data into shapes and colours.
  - words;
  - pictures;
  - mathematical formulas.
- Computer animation is the process of creating ... which move across the screen
  - objects and pictures;
  - mathematical formulas;
  - books.
- The collection of tools in a package is known as ... . a) palette; b) polygon; c) palate.
- ... are called "primitives". a) the digits; b) the basic geometric shapes; c) the letters.
- The various tools in a palette usually appear together as ... in a menu.
  - pop-up corks;
  - pop-up letters;
  - pop-up icons.



### IX. Put the verbs into the correct tense form:

1. Computer graphics (represent) pictures and drawings produced by computers.
2. To produce images that (can) be displayed on the screen the computer (to use) hundreds of mathematical formulas.
3. Computers (to help) in CAD and CAM to save time and money.
4. In business computers (to be used) to present information as graphics and diagrams.
5. With the help of computer animation scientists and engineers (to analyze) problems.
6. What a graphic package (to enable) the user to draw?

### X. Translate:

1. Набор инструментов графического пакета известен под названием «палитра».
2. Более того, вы можете определять свойства каждого примитива, т.е. его цвет, тип линии и т.д.
3. Инженеры электрики используют компьютерную графику для проектирования схем.
4. Компьютер преобразует вводимую команду в графические образы при помощи математических формул.

### XI. Give summary of the above text.

#### TEXT 17

#### CD-ROM DRIVE UNIT

#### E2850

#### Important Safeguards

1. *Read Instructions* - All the safety and operating instructions should be read before the product is operated.
2. *Retain Instructions* - The safety and operation instructions should be retained for future reference.
3. *Heed Warnings* - All warnings on the product and in the operating instructions should be adhered to.
4. *Follow Instructions* - All operating and use instructions should be followed.
5. *Water and Moisture* - The product should not be used near water, for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.

6. *Carts and Stands* - The product should be used only with a cart or stand that is recommended by the manufacturer.

A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.

7. *Mounting* - The product should be mounted into a computer as recommended by the manufacturer.

8. *Ventilation* - The product should be situated so that its location or position does not interfere with its proper ventilation. For example, the product should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.

9. *Heat* - The product should be situated away from heat sources such as radiators, heat resisters, stoves, or other appliances (including amplifiers) that produce heat.

10. *Power Source* - The product should be connected to a power supply only of the type described in the operating instructions or as marked on the product.

11. *Power-Cord Protection* - Power-supply cords should be routed so that they are not likely to be pinched by items placed upon or against them, paying particular attention to cords at plugs convenience socket and/or jacks, and the point where they exit from the product.

12. *Cleaning* - The product should be cleaned only as recommended by the manufacturer.

13. *Object and Liquid Entry* - Care should be taken so that objects do not enter and liquids are not spilled into the enclosure through openings.

14. *Damage Requiring Service which is NOT covered under warranty* - The product should be serviced by qualified service personnel when:

- a) The power supply cord or the jack/plug has been damaged; or
- b) Objects have entered, or liquid has spilled into the product; or
- c) The product has been exposed to rain; or
- d) The product has been dropped, or the enclosure damaged.

15. *Servicing* - The user should not attempt to service the product beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

**Natasha, an experienced computer user, has recently bought a CD-ROM drive unit. She enjoys using it. But she regularly makes**

**three mistakes. Read the safeguards in English, the girl's description of her work in the letter to her pen-friend in Russian, find these mistakes and write them down.**

Не так давно я купила замечательное восьмискоростное устройство для работы с компакт-дисками. Мне часто приходится работать с компьютером. Мой друг, который хорошо разбирается в компьютерах и знает английский язык, помог мне правильно подсоединить его к компьютеру, строго следуя инструкциям. Он меня предупредил, что нужно строго следовать инструкции. Ему пришлось установить специальную розетку для устройства. Он рассказал мне, что нельзя ставить устройство и компьютер вблизи источников тепла, и я это строго выполняю. Мне приходится очень много работать, и, чтобы снизить вредное излучение от монитора, я ставлю на компьютер кактусы. Кроме того, это создает уютную обстановку и удобно, так как их не надо часто поливать. Иногда для работы мне нужно много книг, журналов, справочников. Компьютер часто завален книгами. Мне не хватает места. Мне приходится ставить компьютер и все устройства на пол. Но это не страшно, так как на полу лежит толстый мягкий ковер. Я слежу за тем, чтобы шнур не попадал ни под какие предметы. Я знаю, что, если произойдут какие-то сбои в работе техники, лучше обратиться за помощью к профессионалу. Но пока все в порядке. И я получаю удовольствие от работы. Особенно, когда работаешь и рядом стоит чашечка горячего крепкого кофе.

## Содержание

TEXT 1.....	3
TEXT 2.....	5
TEXT 3.....	8
TEXT 4.....	8
TEXT 5.....	9
TEXT 6.....	15
TEXT 7.....	19
TEXT 8.....	23
TEXT 9.....	25
TEXT 10.....	30
TEXT 11.....	31
TEXT 12.....	36
TEXT 13.....	37
TEXT 14.....	40
TEXT 15.....	44
TEXT 16.....	46
TEXT 17.....	49