Тексты к контрольным работам

для студентов 3-4-х курсов (Компьютерные специальности)

Text 1. COMPUTER APPLICATION

Read and translate the text

1. ***A.*** An electronic computer is one of the greatest achievements of the man. Today computers play chess, compose music, translate from and into foreign languages, help to solve many important problems in science, engineering, business. They save a lot of time and energy, operate at great speed, *store* large quantities of information, carry out long and complex operations. There are some categories of computer application: business, medicine, engineering, education, home.

2. ***B.*** The business segment is one of the largest. Computers process a large volume of data in a short period of time. No man can do 500,000 sums per second, but a modern computer can. *Databases*, *spreadsheets*, and *word processors* help business to run more efficiently, make administrative work easier.

3. ***C.*** In science and engineering, computers do calculations, draw diagrams, *process* the results of experiments, keep records, help with other kinds of chores.

4. ***D.*** In medicine databases, diagnostic devices, *monitoring* systems serve doctors in their work, in medical and laboratory research

5. ***E.*** The ability to work with a computer is a necessary basic skill today. In primary and secondary schools pupils learn how to operate a computer. Computer-assisted instruction helps students to study at their own pace more intensively and helps teachers to do their work more creative. They can be used to teach courses such as *computer-aided-design*, language learning, programming, mathematics, etc.

6. ***F.*** Personal computers are also used for administrative purposes, for example, schools use databases and word processors to keep records of students, teachers and materials.

7. ***G.*** At home most often people use personal computers to play video games or for education, to teach children. Computers serve as word processors, electronic message centres and personal finance devices.

8. ***H.*** There are some social problems of computer technology. The most important is the elimination of jobs by computers. Another problem is the invasion of privacy, the security of all confidential data banks. Still another is a technophobia, a fear of machines in general and of computers in particular. Very often the technophobia is the result of the elimination of jobs or the invasion of privacy. Scientists study all these problems to find a way out, because computer technology has a great potential for more progressive transformation of our society.

Text 2. COMPUTER COMPONENTS

Read and translate the text

A. Computers are electronic machines which can accept data in a certain form, process the data and give the results of the processing in a specified format as information.

B. Three basic steps are involved in the process. First, data is fed into the computer's memory. Then, when the program is run, the computer performs a set of instructions and processes the data. Finally, we can see the results (the output) on the screen or in printed form.

C. Information in the form of data and programs is known as *software*, and the electronic and mechanical parts that make up a computer system are called *hardware*. A standard computer system consists of three main sections: the central processing unit (CPU), the main memory and the peripherals.

D. Perhaps the most influential component is the *central processing unit*. Its function is to execute program instructions and coordinate the activities of all the other units. In a way, it is the 'brain' of the computer. The *main memory* holds the instructions and data which are currently being processed by the CPU. The *peripherals* are the physical units attached to the computer. They include storage devices and input/output devices.

E. *Storage devices* (floppy, hard or optical disks) provide a permanent storage of both data and programs. *Disk drives* are used to handle one or more floppy disks. *Input devices* enable data to go into the computer's memory. The most common input devices are the *mouse* and the *keyboard*. *Output devices* enable us to extract the finished product from the system. For example, the computer shows the output on the *monitor* or prints the results onto the paper by means of a *printer*.

F. On the rear panel of the computer there are several ports into which we can plug a wide range of peripherals – modems, fax machines, optical drives and scanners.

G. These are the main physical units of a computer system, generally known as the *configuration*.

Text 3. MICROPROCESSOR

Read and translate the text

A. The nerve centre of a microcomputer is the central processing unit or CPU. This unit is built into a single microprocessor chip – an integrated circuit – which executes program instructions and supervises the computer's overall operation. The unit consists of three main parts.

B. The *control unit*, which examines the instructions in the user's program, interprets each instruction and causes the circuits and the rest of the components – disk drives, monitor, etc. – to be activated to execute the functions specified. The *arithmetic logic unit* (ALU), which performs mathematical calculations (+, - , etc) and logical operations (and, or, etc.). The *registers*, which are high-speed units of memory used to store and control information. One of these registers is the program counter (PC) which keeps track of the next instruction to be performed in the main memory. Another is the instruction register (IR) which holds the instruction that is currently being executed.

C. One area where microprocessors differ is in the amount of data – the number of bits – they can work with at a time. There are 8, 16, 32 and 64 – bit processors. The computer's internal architecture is evolving so quickly that the new 64 – bit processors are able to address 4 billion times more information than 32 – bit system.

D. The programs and data which pass through the central processor must be loaded into the *main memory* (also called the *internal memory*) in order to be processed. Thus, when the user runs an application, the microprocessor looks for it on secondary storage devices (disks) and transfers a copy of the application into the RAM area. RAM (random access memory) is temporary, i.e. its information is lost when the computer is turned off. However, the ROM section (read only memory) is permanent and contains instructions needed by the processor.

E. Most of today's computers have internal *expansion slots* that allow users to install adapters or expansion boards. Popular adapters include high-resolution graphics boards, memory expansion boards, and internal modems.

F. The power and performance of a computer is partly determined by the speed of its microprocessor. A *clock* provides pulses at fixed intervals to measure and synchronize circuits and units. The clock speed is measured in MHz (megahertz) and refers to the frequency at which pulses are emitted. For example, a CPU running at 500 MHz (500 million cycles per second) is likely to provide a very fast processing rate and will enable the computer to handle the most demanding applications.

Text 4. INPUT / OUTPUT DEVICES

Read and translate the text

A. Input devices are pieces of hardware which allow us to enter information into the computer. The most common are the keyboard and the mouse. We can also name a lightpen, a scanner, a trackball, a graphics tablet, a joystick, etc.

B. A *mouse* is a palm-sized device, slightly smaller than a pack of cards. On top of the mouse there are one or more buttons for communicating with the computer. A 'tail' or wire extends from the mouse to a connection on the back of the computer. The mouse is designed to slide around on your desktop. As it moves, it moves an image on the screen called a *pointer* or *mouse cursor* which mimics the movements of the mouse on your desktop. What makes the mouse especially useful is that it is a very quick way to move around on a screen. The mouse also issues instructions to the computer very quickly. Mice are also widely used in graphics applications because they can do things that are difficult, if not impossible, to do with keyboard keys. The buttons on the mouse are used to select items at which the mouse points. You position the pointer on an object on the screen, for example, on a menu or a tool in a paint program, and then you press the mouse button to 'select' it. Mice are also used to load documents into a program.

C. After the entered information has been processed internally, we can see the results on the visual display unit. To obtain the permanent copy of these results, we can use *plotters*, *printers* or *video recorders*. The *monitor* plays an important part here.

D. The characters and pictures that we see on the screen are made up of dots, also called picture elements (*pixels*). The total number of pixels in which the display is divided both horizontally and vertically is known as the *resolution*. Typical resolutions are 640 x 480 or 1,024 x 768 pixels. The *cathode ray tube* of the monitor is very similar to that of a TV set. Inside the tube there is an electron beam which scans the screen and turns on or off the pixels that make up the image. The beam begins in the top left corner, and scans the screen from left to right in a continuous sequence; this sequence is repeated 50, 60 or 75 times per second, depending on the system. What we see on the screen is created and then stored in an area of RAM, so that there is a memory cell allocated to each pixel. This type of display is called *bit-mapped*. On colour displays, there are three electron guns at the back of the monitor's tube. Each electron gun shoots out a beam of electrons; there is one beam for each of the three primary colours: red, green and blue. These electrons strike the inside of the screen.

E. The monitor is controlled by a separate circuit board called the display adaptor. Some computers have flat liquid-crystal displays which use a grid of crystals and polarizing filters to show the image.

Text 5. STORAGE DEVICES
Read and translate the text

A. Information stored in the RAM is lost when the computer is turned off. Because of this, data and applications are stored in either hard or floppy disks which provide a more permanent backing store.

B. *Floppy disks* are so called because they consist of flexible plastic material which has a magnetizable surface. The surface of a floppy disk is divided into concentric circles or 'tracks', which are then divided into 'sectors'. When you insert a blank disk into a disk drive, it must be 'initialized', or formatted, before information can be recorded into it. When you save a file, the operating system moves the read/write heads of the disk drive towards empty sectors, records the data and writes an entry for the directory. Later on, when you open that file, the operating system looks for its entry in the directory on the disk, moves the read/write heads to the correct sectors, and reads the file into the RAM area.

C. *Hard disks* have important advantages over floppy disks: they spin at a higher speed, so you can store and retrieve information much faster than with floppies. They can also hold vast amounts of information, from 500 MB up to several gigabytes. Apart from this, both types of disks work in the same way. Access times vary from 8 ms to 20 ms. 'Access time' or seek time is the time it takes your read/write heads to find any particular record. You have to distinguish clearly between seek time and data transfer rate, (the average speed required to transmit data from a disk system to the RAM).

D. *Optical disks* can store information at much higher densities than magnetic discs. There are various types of optical drives: CD-ROM systems offer everything, from shareware programs to dictionaries and encyclopedias, from multimedia databases to 3-D games. A lot of institutions have discovered that CD-ROM is the most economical way of sharing information. Yet CD-ROM technology has one disadvantage: you cannot write anything onto a CD-ROM disk. You can only 'read' it, like a book.

E. *CD-Recorders* come in two different forms: CD-R and CD-RW. CD-R machines record on CD-R (write-once) disks, allowing you to create and duplicate CDs. They are used to back up hard disks or to distribute and archive information. CD-RW machines hold CD-RW (rewritable) disks that you can erase and re-use, just as you would do with a hard disk.

F. The future of optical storage is called *DVD* (digital versatile disk). It can store a large amount of multimedia software and complete Hollywood movies in different languages. They can also play music CDs and CD-ROMs. However DVD-ROMs are 'read-only' devices. To avoid this limitation companies also produce DVD rewritable drives.

G. *Magneto-optical (MO) drives* use both a laser and an electromagnet to record information. Consequently, MO disks are rewritable, i.e. they can be written to, erased and then written again.