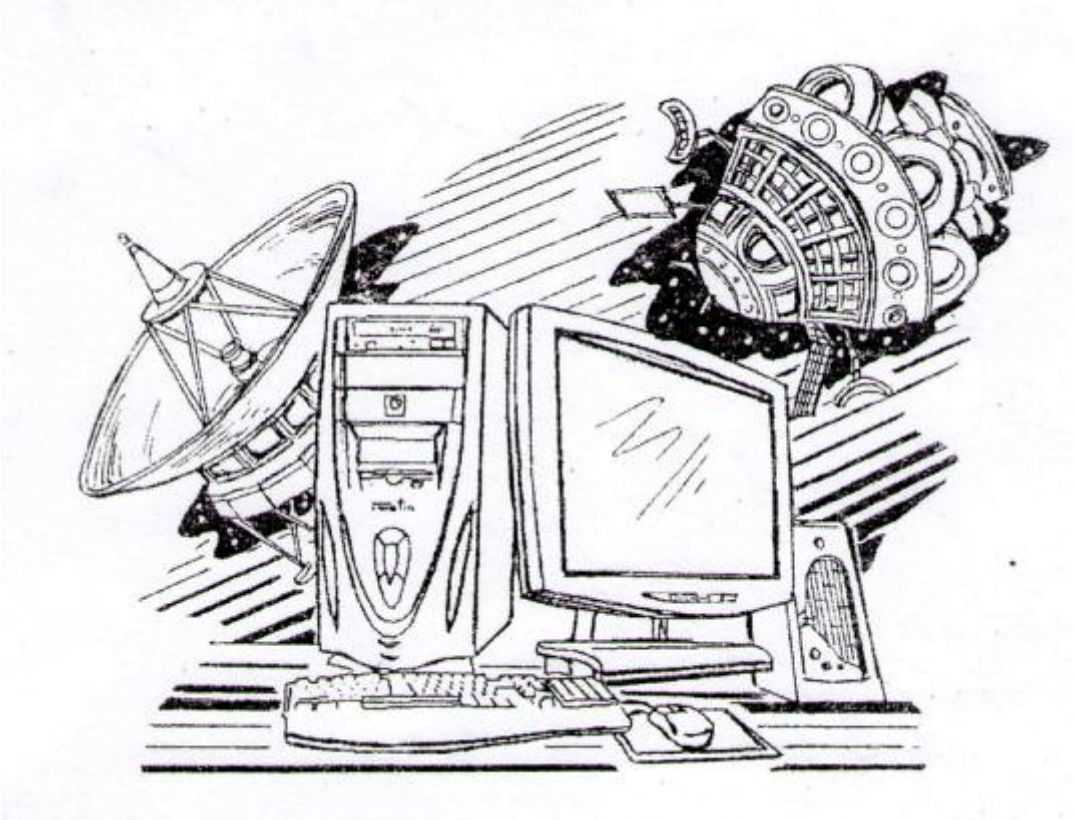
TECHNICAL UNIVERSITY OF MOLDOVA

ENGLISH FOR TELECOMMUNICATIONS AND RADIOELECTRONICS

Methodical elaboration



Chișinău 2009

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Modern Languages Department

English for Telecommunications and Radioelectronics

Methodical elaboration

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Elaborarea de tip manual ”English for Telecommunications and Radioelectronics” se adresează atât studenților de la facultatea de telecomunicații și radioelectronică cât și publicului specializat. Elaborarea urmărește nu numai scopul de a dezvolta vorbirea orală și scrisă, ci și de a realiza principiul interdependenței dintre materialul lingvistic și disciplinele de profil de la facultatea telecomunicații și radioelectronică.

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Unit 1: Electronics

I. Vocabulary:

Electronics: *the science and technology of electrons and electronic devices*

Vacuum tube**:** *American term of thermionic valve/*; electronic component which was commonly used before the invention of semiconductor devices such as transistors - (*lampă electronică*).

Device**:** apparatus = equipment - (*aparat, echipament, dispozitiv*).

Transistor**:** semiconductor component with three electrodes (emitter, base and collector) used for switching or amplifying an electronic signal;-(*transistor*).

IC (integrated circuit)**:** electronic circuit containing many components on a single silicon chip - (*circuit integrat*).

Silicon**:** chemical element (Si) used to make semiconductor components.

Chip *or* ***microchip*****:** small electronic component which contains an integrated circuit on one piece of silicon.

Power**:** = current = energy - (*putere, current, energie*).

Hi h fi **-** high-fidelity: high quality sound reproduction which is true to the original sound - (*de înaltă fidelitate*).

Microelectronics**:** electronics using integrated circuits;

Microprocessor**:** IC chip at the center of a computer for controlling the system and processing the data;

II. Read the text: Electronics

To separate electronics from the concept of electricity is extremely difficult. The field of electricity is generally concerned with magnetism, light, heating and the production of electricity by generators and chemical action.

Electronics began at the start of the twentieth century with the invention of the vacuum tube. The first devices for everyday use were radios, followed by televisions record players, and tape recorders. These devices were large and used a lot of power.

The invention of the transistor in 1947 meant that much smaller, low-powered devices could be developed. A wide variety of electronic devices such as hi-fi units and portable radios became common in the home.

It was not until 1958 that microelectronics began with the development of ICs (integrated circuits) on silicon chips. This led to a great increase in the use of electronics in everyday items. The introduction of the microprocessor allowed electronics to be used for the control of many common processes.

Microprocessors are now used to control many household items such as automatic washing-machines, dishwashers, central heating systems, sewing machines, and food processors. Electronic timers are found in digital alarm clocks, water heaters, electric cookers, and microwave ovens. Several recent developments in the field of electronics have led to better ways to communicate efficiently over long distances. Telephones use electronics to provide automatic dialing and answer phone facilities. New entertainment devices have been developed, such as video recorders and CD (compact disc) players.

Electronics is likely to become even more common in the home as multimedia entertainment systems and computer-controlled robots are developed.

Large-scale application of electronic technique is a trend of technical progress capable of revolutionizing many branches of industry.

Electronics as a science studies the properties of electrons, the laws of their motion, the laws of the transformation of various kinds of energy through the media of electrons.

At present it is difficult to enumerate all branches of science and technology which are based on electronic technique. Without radio electronics we would not have cybernetics, cosmonautics and nuclear physics. It is no mistake, therefore, to compare the birth of electronics to such great achievements of mankind as the discovery of fire, the use of the wheel, and the penetration into the secrets of the atom.

III. Answer the following questions:

1. Is it possible to separate electronics from the concept of electricity? Why?
2. When did electronics begin?
3. Which devices were used in the house?
4. What was invented in 1947?
5. Which device allowed electronics to be used for the control of many common processes?
6. What can you say about the future of electronics?
7. What does electronics study?
8. Which other fields are connected with electronics at present?

IV. Activities

1. What do you know about these devices? You can describe them using the answer of these questions:

a) What kind of machine is the respective device?
b) What is the device used for?
c) What is the device capable of performing?
d) What is the device based on?
e) What is the architecture of the device?

Record player	Sewing machine
Tape recorder	Food processor
Household items	Digital alarm clock
Washing-machine	Water heater
Dishwasher	Electric cooker
Heating system	Microwave ovens

2. Find out the meaning of these abbreviations:

1. IC; 2. CD ; 3. hi-fi ; 4. PC; 5. TV.

3. Fill in the gaps in this table with the help of the text:

Date	Invention	Application in the home
Early 20th century	----------	----------
----------	transistor	----------
1958	----------	----------
----------	----------	automatic washing-machines
Future	----------	----------

4. Are these statements true or false? If they are false, explain why:

1. To separate electronics from the concept of electricity is too easy.
2. Electronics began at the start of the 20th century with the invention of the telephone.
3. The first devices for everyday use were large and used a lot of power.
4. Several recent developments in the field of electronics have led to better ways to communicate efficiently over long distances.
5. Transistors use electronics to provide automatic dialing and answerphone facilities.
6. Electronics as a science studies the properties of electrons, the laws of their motion, the laws of the transformation of various kinds of energy through the media of electrons.

5. Put the jumbled words in the correct order:

1. large, power, devices, and, a, were, lot of, these, used.
2. such, new, CD players, entertainment, as, devices, developed, and, video recorders, have been.
3. now, items, microprocessors, to control, are, many, used.
4. cosmonautics, without, and, radio electronics, nuclear, would, cybernetics, not have, we,
5. application, a trend, progress, of, technique, technical, of, large scale, electronic, is.
6. with, began, vacuum tube, the invention, at, 20th century, electronics, the, of, start, the, the, of.
7. common, wide, electronic devices, portable radios, variety, of, such, and, the home, as, became, in, a, hi-fi units.
8. water heaters, are, and, digital alarm clocks, found, microwave ovens, electronic timers, in, electric cookers.

Language study:

The participle

1. the –***ing*** Participle

Active Voice

Calling, taking ***having called, having taken***

Passive Voice

Being called, being taken ***having been called, having been taken***

2. **Participle II**

To call- ***called***; to take- ***taken***; to write - ***written***; to speak- ***spoken***; to do- ***done***;

6. In the sentences below, find the participles and translate the sentences into Romanian:

1. Reading the article, I discovered some interesting things.
2. Having read the report, I decided to make some suggestions.
3. When speaking English, pay more attention to pronunciation.
4. Entering the office, the manager found all the mail on his desk.
5. Not knowing how to solve the problem, they decided to appeal to the teacher.
6. Did you see your mother coming home?
7. We didn't notice him entering the room.
8. Where did you hear them talking about it?
9. He would like to have his proposals considered before taking the final decision.
10. I like the suggestion made by this team leader.
11. Where are the tests prepared for the tomorrow exam?
11. The project being finished, we began to think about starting a new one.

7. Make up sentences of your own using the verbs from the text in the Participle:

V. Round up and Writing Practice

1. Translate the following sentences:

1. Primele aparate electrice erau foarte mari şi consumau multă energie.
2. Electronica a apărut la inceputul secolului 20 odată cu invenţia lămpilor electronice.
3. În prezent este dificil de enumerat toate ramurile ştiinţei şi tehnologiei care sînt bazate pe tehnica electronică.
4. Domeniul electricităţii ţine de magnetism, lumină, căldură şi producerea electricităţii de către generatoare.
5. Apariţia microprocesoarelor a permis electronicii să fie folosită la dirijarea multor procese cunoscute.
6. Nu va fi ogreşală, dacă comparăm apariţia electronicii cu unele mari realizări ale omenirii aşa ca descoperirea focului, folosirea roţii, pătrunderea în secretele atomului.
7. Electronica devine si mai cunoscută în casele noastre ca sisteme de distracţie multimedia şi apariţia roboţilor dirijaţi de computer.
8. Microprocesoarele sunt folosite la dirijarea numeroaselor aparate de uz casnic, aşa ca maşini automate de spălat, maşini pentru spălarea vaselor, sisteme centrale de încălzire, maşini de cusut, aparate pentru pregătirea bucatelor, ş.a.

2. Retell the text.

VI. Memorize and comment the following quotations:

- Strike while the iron is hot.
- Knowledge is power.

VII. Read, translate and retell this text:

A REVOLUTION IN PHYSICAL SCIENCE – ELECTRONICS

The discovery of the electron, and the investigations into its nature which followed, led to a revolution in physical science. The application of the new knowledge in applied science and above all in the applied science of electronics, led to a revolution in technology and is now bringing about a revolution in twentieth-century civilization which dominates our time and will determine

our future. This would sound absurd. After all, in the two-thirds of a century which has elapsed since the discovery of the electron, there have been many other great scientific discoveries; brilliant achievements in technology have followed one another at breath-taking speed.

Before the discovery of the electron our knowledge of the nature of matter had advanced little beyond the conjectures of the Ancient Greeks. There was very strong evidence that all substances were made up of a limited variety of different kinds of 'ultimate' particles called atoms. The word 'atom' means 'uncuttable' and it was generally accepted that if it were possible to cut up a piece of, say, pure gold into smaller and smaller bits, the process would end with a large number of very small, identical, gold atoms which could be cut no further. A great deal was known about the properties of substances like gold, copper and iron, yet no one could explain the differences between gold, copper and iron atoms. The efforts of the alchemists, for example, to change iron, copper or tin into gold simply underlined their ignorance of atomic structure. Today one can break up atoms into smaller bits and change some kinds of atoms into other kinds because we know something of how atoms are made. Modern atomic theory began with Thomson's discoveries in the Cavendish Laboratory and caused a revolution in physics which in turn transformed the whole of science.

The searchlight which Thomson threw on the hidden world of the atom paved the way for many exciting new discoveries at the Cavendish laboratory and by physicists all over the world. The outstanding achievements alone included: the discovery of the atomic nucleus and the proton by Rutherford, Thomson's young collaborator from New Zealand who was to outshine even the illustrious 'J. J.'; the discovery of the neutron by one of Rutherford's 'young men', James Chadwick; and the invention of the particle accelerator by two others, Cockcroft and Walton. Discoveries such as these inspired the great mathematical physicists of the early twentieth century who were then formulating their revolutionary theories. Planck's Quantum Theory, Einstein's Theory of Relativity, Bohr's model of the atom, were all concerned to account for the observed behaviour of electrons, protons and other fundamental particles of the universe.

The revolution in pure science rapidly bore fruit in many fields of applied science and technology, especially in the applied science of electronics. The vacuum techniques developed for the study of free electrons led directly to the radio valve, and the Crooke's tube which aroused Thomson's interest in cathode rays was the father of the television receiver. The new electronics combined with the older techniques of the telegraph and telephone produced a revolution in communications. If the discovery of electron had led only to radio and television it would still represent a decisive factor in the shaping of our civilization.

Electronics produced radar. It led to nucleonics and hence to the exploitation of the immense store of energy locked in the atom. It gave birth to the electronic computer. By the middle of the twentieth century a rapidly expanding, world-wide electronics industry was pouring out millions of parts of radio and television receivers and instruments for every branch of science and technology — instruments capable of unprecedented speed and sensitivity.

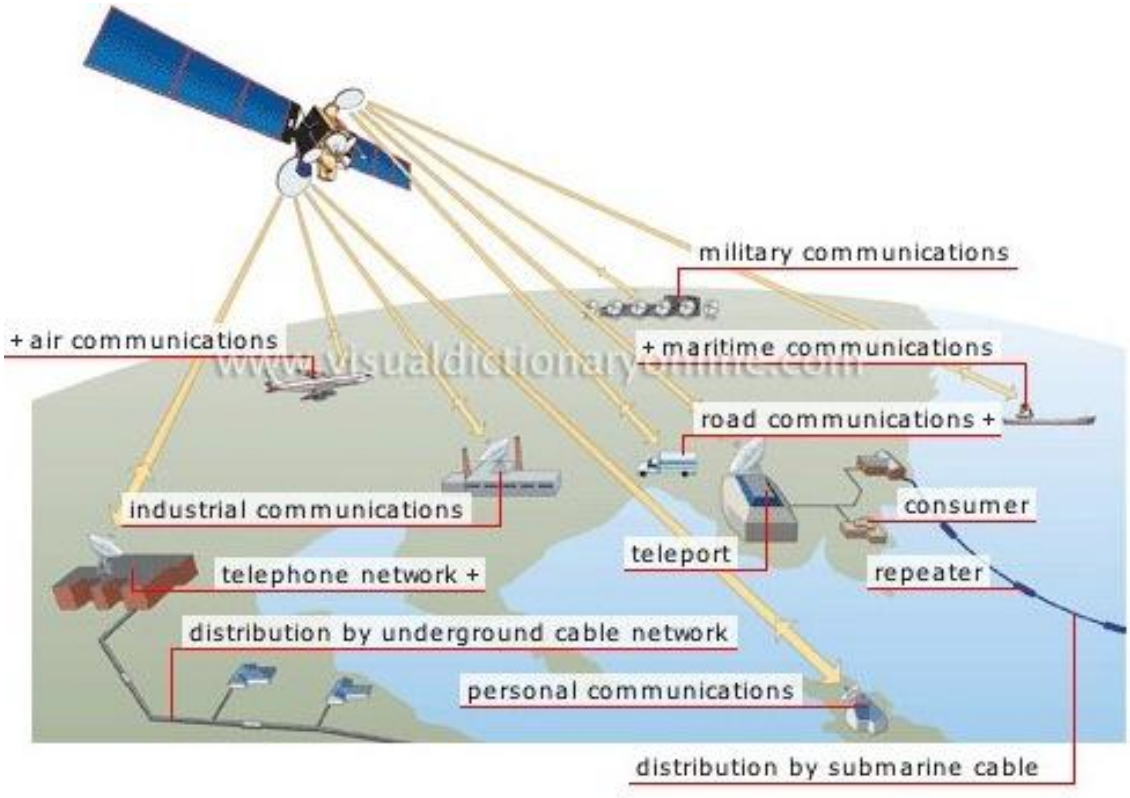
Electronic devices give immense extension to our senses. One can now examine structures too small to be visible in even the most powerful optical microscope and receive signals from radio stars which started their long journey through space"-ages before there was any life on our planet. Electronics combined with rocketry has enabled scientists to take close-up pictures of the moon and made it possible for men to land on it. Electronics applied to medicine has already produced significant advances in diagnosis and treatment.

In industry, electronics plays the leading role in automation which is generating a second industrial revolution of wider social significance than the first.

In the home electronically controlled appliances will replace domestic drudgery and in the office electronic data processing machines will replace mental drudgery.

The increased leisure which will result in the electronic revolution will create problems for society but it will also enrich and extend human culture and provide opportunity for the enjoyment of the vastly increased facilities for social and cultural interchanges which electronics will make possible.

Unit 2: Telecommunications



I. Vocabulary:

***Telecommunication*:** *transmission and reception of signals over long distances.*
***Telegraphy*:** transmission of coded electrical signals over long distances.
***Telegraph*:** device for transmitting coded electrical signals over long distances.
***Telex*:** communications service for transmitting simple text over long distances - (*telex, telegraf*).
Coded message *or* ***coded information*** is written or sent using a special system of words, letters, numbers, etc. that can only be understood by a few other people or by a computer - (*mesaj sau informaţie codată*).
***Telephone*:** communications device which enables one person to speak to another over long distances.
***Electromagnetic wave*:** travelling wave which displays electrical and magnetic properties - (*undă electromagnetică*).
***Broadcasting*:** transmitting radio or TV signals- (*emisiune, transmitere*).
***Ionosphere*:** layers of ionized gases and electrons existing in the earth's upper atmosphere at heights of 50-500 km.
***Diode*:** semiconductor component which only allows current to flow in one direction - (*diodă*).
***Receiver*:** 1) the part of a telephone that you hold close to your mouth and ear.
2) a piece of radio or television equipment that changes broadcast signals into sound or pictures - (*receptor*).
***Transmitter*:** electronic circuit for sending out signals - (*transmiţător, emiţător*).
***Television (TV)*:** communications system for the transmission and reception of video images over lond distances.
***Radar*:** radio detection and ranging: electronic system which uses the reflection of microwaves to detect the presence of an object and measure its distance and position relative to the transmitter.
***Intelligent terminal*:** computer terminal which is capable of carrying out some processing on the data.
***Optical fibre*:** strand of silica for guiding light waves.

***Analogue*:** able to take on any value between an upper and lower limit.
***Digtal*:** having only discrete levels (usually two levels).
PCM: pulse code modulation.

II. Read the text: Telecommunications

The first true telecommunication systems using electrical signals to carry messages started in the 1840s with machine telegraphy. Samuel Morse first developed the telegraph in 1832 but it was not until the mid-1840s that the system was put into practical use- sending coded electrical massages (Morse Code) along the wires. The telegraph became a rapid success, its speed quickly outdating the Pony Express for long distance communications.

The next major step forward came in 1878 with the invention of the telephone by Bell. This enabled speech to be transported as electrical signals along wires and revolutionized personal communications.

In 1886, Hertz verified experimentally that electrical energy could be radiated and thus proved the existence of electromagnetic waves. This opened the way for the free-space transmission of information without wires. This provided the basis for all radio and TV broadcasting.

In 1901, Marconi established long-distance telegraph communication by transmitting between England and Canada. Although he did not realize it at the time, he achieved such long distances by reflecting radio waves in the ionosphere. This overcame the problem of transmitting round the earth from one side of the Atlantic to another.

With the discoveries of the diode and thermionic valve, advances were made in both receiver and transmitter design with an associated impact in telegraphy, telephony, and civil and military communications. Radio broadcasting soon followed, with powerful transmitters serving to communicate over wide areas. Television (TV) was first established in 1937. Radar was also developed from the 1930s and played a vital role in aircraft detection and navigation in World War II.

As further advances in technology took place (the invention of the transistor in 1947 and the subsequent development of microelectronic integrated circuit technology), new applications became feasible, and new systems were developed.

Data communications - the transmission of coded data (text, graphics, financial information) between „intelligent" terminals and computers - was first established in the early 1950s using modems, equipment which enables the telephone network to convey data as well as speech. Other improvements in materials and devices also led to the transmission of information via cables. Much of today's long- distance telephone traffic is by submarine cable.

The space race led to yet another means of long - distance communication, via fixed and mobile earth stations to satellites. Today, several hundred satellites orbit the earth, and satellite links provide all forms of communication and related services such as telephony, data, TV, navigation, meteorology, and surveillance.

One of the very latest developments is the optical fibre cable- a tiny glass fibre which can be used to convey signal information by light pulses. Optical fibre cable with extremely low loss at low cost has now been developed with very high data – carrying capacity. Several thousands of telephone messages can be carried down by a single fibre.

Perhaps the gratest change which has occurred in the last thirty years is that from analogue to digital methods of information transmission. The very first commercially employed telecommunication system, telegraphy, was and still is a digital system. However, telephony, radio, and TV all started as analogue systems. Today, the general trend is strongly towards the digital, and even now, the vast majority of telecommunications systems are digital. Problems of noise and interference can be combated much more successfully in a digital system.

The advances in microelectronics and the merging of communications with computers have led naturally to the digital transmission mode with its advantages of computer control, automatic error checking of signals, excellent memory storage facilities for data, and intelligent terminals. The

market need for vast quantitiesof information transmission and processing at very high speed can only be reliably catered for by using digital technics. In fact the most rapidly growing field is almost certainly in data comunications employing high-speed digital techniques.

III. Make up questions to the following sentences:

1. Television was first established in 1937.
2. Other improvements in materials and devices led to the transmission of infirmation via cables.
3. This provided the basis for all radio and TV broadcasting.
4. The greatest change which has occurred in the last twenty years is that from analogue to digital methods of information transmission.
5. Optical fibre cables have improved the telephone system immensely.
6. The next major step forward came in 1978 with the invention of the telephone by Bell.
7. This opened the way for the free-space transmission of information without wires.
8. The advances in microelectronics and the merging of communications with computers have led to the digital transmission mode.

IV. Activities

1. Put these developments in telecommunications in the order in which they were invented:

a) telex
b) communication satellites
c) modems
d) telegraphy
e) television
f) internet
g) radio
h) telephone
i) optical fibres
j) radar.

Now you may check your answers with Fig.1:

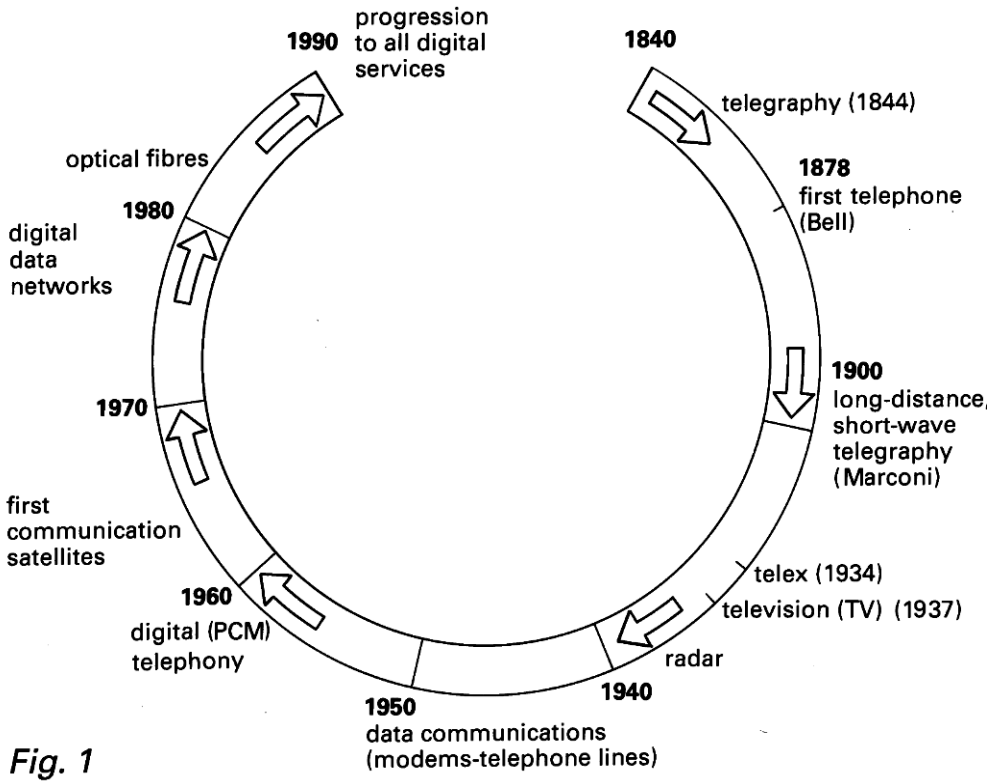


Fig. 1

2. Answer these questions with the help of Fig.1:

1. Who invented the telephone?
2. What important development in telecommunications took place in the 1960s?
3. What prediction is made about developments in the 1990s?
4. When was telex introduced?
5. What form of telecommunications uses PCM?
6. When did optical fibres appear?
7. When was internet introduced?
8. What other recent telecommunication inventions do you know?

3. Fill in the gaps in this table with the help of the text:

Development	**Significance**
19th century	
Telegraphy (Morse)	----------
Telephone (Bell)	----------
Existence of electromagnetic waves proved(Hertz)	----------
1901-1945	
Long-distance telegraphy via ionosphere	----------
Valves	----------
Radar	----------
1946-1980	
Transistor	----------
Data communications	----------
Communications satellites	----------
1980s on	
Optical fibre cable	----------
Change to digital systems	----------
Digital transmission mode	----------

Exchange information with the others in your group to complete the table with the latest telecommunications developments.

Language study:

Simple Past versus **Present Perfect**

Study these sentences:

1. Engineers **developed** optical fibre cables in 1980s.
2. Optical fibre cables **have improved** the telephone system immensely.
3. Morse first **developed** the telegraph, a digital system, in 1832.
4. Digital systems of information transmission **have replaced** analogue systems in the last 20 years.

Why is the Simple Past used in 1 and 3 and the Present Perfect in 2 and 4?

***We use the **Simple Past** for events which tookplace in the past and are complete. Sometimes a day, date or time is given, e.g. *in 1832, on Tuesday*.

***We use **Present Perfect** for past events which have present results. This tense

links the past with the present. Sometimes we use expressions such as *in the last twenty years, since the war, now* to show the link. Using the Present Perfect shows that we think the past events are of current relevance.

4. Look through the text for examples of the Present Perfect and Simple Past. Explane their using.

5. Put each verb in brackets in the correct tense and form:

Alexander Graham Bell --------(to invent) the telephone in 1878. He ---------(to be) a Canadian whose family --------(to come) from Scotland. Since then, telephone systems ---------(to grow dramatically; in the UK alone there --------(to be) now over 24 million lines. Formerly, the UK system ----------(to be) analogue. Many changes ----------(take place) in recent years. Almost the entire UK network ---------(to be) now digital. Fibre optic cables ----------(to replace) the old copper lines. Previously, telephone exchanges ----------(to use) banks of electromagnetic relays for switching. Today, they ---------(to have) computer-controlled units. The new network (to be) fast and reliable, allowing users access to many other communications services.

6. Make up sentences in the Simple Past and Present Perfect using the following word combinations:

Telecommunications systems	Free-space transmission
Electrical signals	Radio and TV broadcasting
To carry messages	To reflect radio waves
To put into practical use	Diode and thermionc valve
Long-distance communications	Data communications
To invent the telephone	Intelligent terminals
Electromagnetic waves	Optical fibre cable
Without wires	From analogue to digital

7. Guess the words reading the definitions:

a) Technology of sending signals, images and messages over long distances by radio, telephone, television, satellite.
b) A system for talking to smb. else over long distances, using wires or radio.
c) An electronic mashine that can store, organize and find information, do calculations and contriol other mashines.
d) Method of sending messages over long distances, using wires that carry electrical signals.
e) A piece of equipment used for listening to programmes that are broadcast to the public.
f) Telecommunications device which circles the earth to receive, amplify, and retransmit signals around the world.

V. Round up and Writing Practice

1. Translate the following sentences:

1. Telecomunicaţiile sînt dispozitive şi sisteme ce transmit semnale electronice la distanţe mari.
2. Oamenii au început a născoci diferite forme de a transmite la distanţe diferite semnale acustice sau vizuale.
3. Ultimele conlucrari în domeniul sistemelor de comunicare sînt sistemele optoelectronice.
4. Cu ajutorul noilor tehnologii s-a mărit viteza transmiterii semnalelor de cîteva ori.
5. Odată cu apariţia telefonului, radioului, televiziunii şi computerului, comunicarea a devenit mult mai eficientă.

6. Omul contemporan, cu ajutorul sateliţilor, poate transmite semnale in orice colţ al globului pământesc.
7. Telecomunicaţiile joacă un rol mare în viaţa omului, deoarece, datorită acestei sisteme, oamenii au posibilitatea să transmită şi să primească informaţii la timp.
8. Descoperirea undelor electromagnetice a făcut posibilă transmiterea informaţiei prin radiou şi televizor.
9. Cîteva mii de mesaje telefonice pot fi transmise printr-o singură fibră optica.
10. Avantajele microelectronicii şi fuziunile telecomunicaţiilor cu calculatorul au dus la posibilitatea transmiterii informaţiei digitale.

2. Retell the text A.

VI. Memorize and comment the following quotations:

- Imagination is more powerful than knowledge.
- After rain comes fair weather.

VII. Read, translate and retell this text:

TELECOMMUNICATIONS AND THE COMPUTER ERA

Telecommunications are devices and systems transmitting electronic signals across long distances. By means of such devices people around the world can get in touch with one another, access information rapidly, and communicate. Telecommunications implies the existence of a sender of information and of more recipients connected by a technology.

In order to transmit data, telegraphs, telephones, radio, television modify electronic signals, working by analog transmission. On the other hand, computers and other types of electronic equipment transmit digital information. Digital technologies convert a message into electronic form. Digital information can be transmitted faster and more clearly than analog signals. Digital transmissions can be sent over wires, cables or radio waves, and must be decoded by a digital receiver. New digital telephones and televisions have made telecommunications more efficient.

Personal computers can communicate with each other and with larger networks, such as the Internet, by using the ordinary telephone network. The computer converts its digital data into sound by means of a device called a modem (abbreviated form for modulator/demodulator). Digital signals are converted into analog signals and back again by modems. Thus computers communicate, or network, across the world.

Computer telecommunications makes possible sending and receiving audio, video, text, software, and multimedia information. This stands as one of the fastest-growing segments of telecommunications market. Existing telephone connections are used by computer telecommunications to transmit digital data. This type of transmission is frequently done over networked computers.

The transfer of information by electronic means is achieved through connections between groups of computers and associated devices called networks. Individual computers are called work stations, and communicate to each other via cable or telephone line linking to servers.

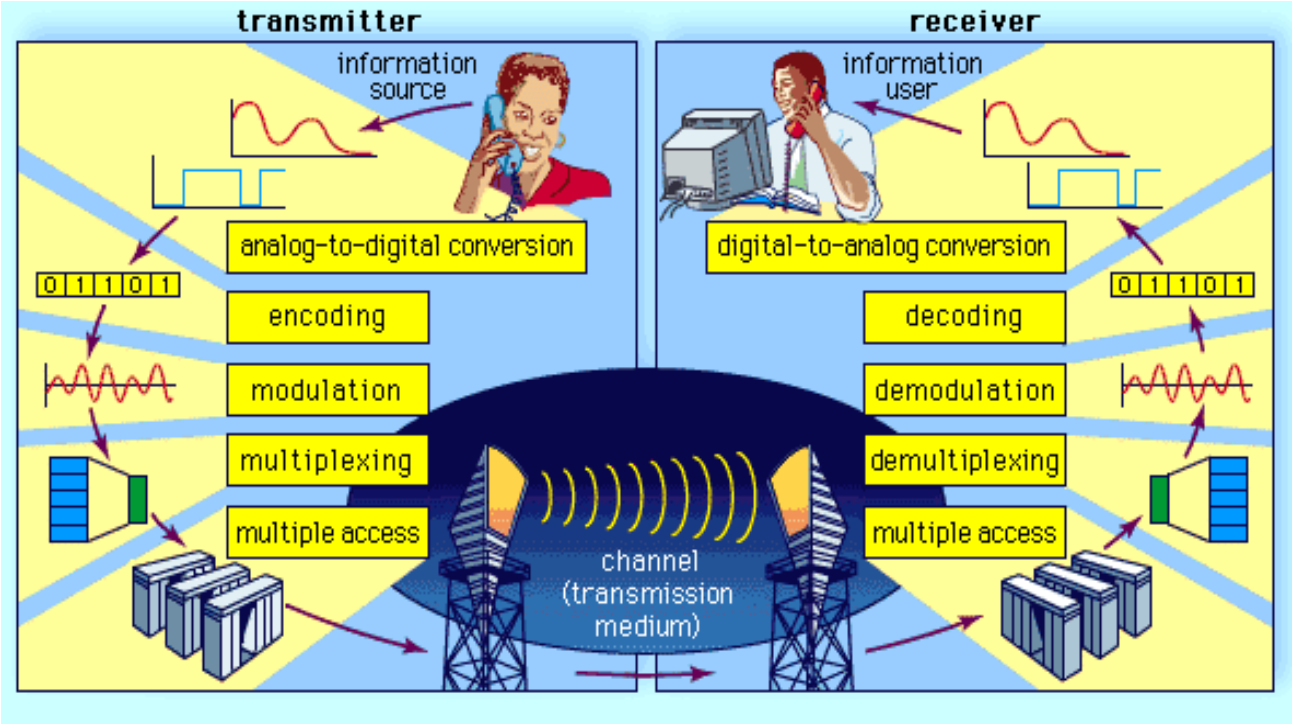
The Internet has made it possible for people all over the world to effectively and inexpensively communicate with each other. This is a decentralized network of personal, business, educational computers, and sources of information.

Electronic mail or e-mail, is today a common form of computer telecommunications through the Internet. E-mail is a text-based message delivery system. It allows information to be sent to individual computer users.

Businesses frequently use computer telecommunications technologies with automated banking-terminals and devices for credit transactions.

Unit 3: Telephony

The telephone



I. Vocabulary:

***Sound wave*:** a vibration in the air, in water, etc. that we hear as sound - (*undă sonoră*).
***Diaphragm*:** thin plate which moves easily when a small amount of pressure is applied to it.
***To induce*:** produce an electric or magnetic effect at a distance - *(a determina*).
***Circuit*:** closed path around which a current can flow.
***Switchboard*:** telephone switching center where a person controls the switching of lines - (*centrală telefonică*).
***Microphone*:** device for converting sound waves into electrical signals.
***Insulator*:** material which does not allow current to flow - *(izolator*).
***Frequency*:** how often a pattern is repeated every second - (*frecvenţă*).
***Coil*:** spiral of wire used as an inductor - (*bobină*).
***Fuse*:** electrical component used as a safety device which heats up and melts, breaking the circuit when the current becomes too large - (*siguranţă*).
***Sheath*:** close-fitting protective covering - (*înveliş*).
***To convert*:** change from one form into another - (*a schimba, a transforma*).

II. Read the text: The Telephone

The first telephone was invented in 1876. Speech transmission in those days was limited to a distance of a few miles and the construction of the first telephone was simple. A wire with a ground provided the connection. The main parts were a transmitter and a receiver. Sound waves struck the diaphragm and caused it to vibrate. The vibration of the diaphragm changed the magnetic field, inducing electric waves of varying voltage and current. These waves passed to the distant telephone where the changes produced in the magnetic field caused the diaphragm to reproduce the original sound.

Later development of the telephone changed its construction, it became more complex. Transmitters and receivers were separated. Auxiliary elements were used in its circuit to provide for better transmission of speech.

The need to connect any two of a large number of telephone sets led to the development of a switchboard in 1878. The advantage of a central switching office with a switchboard was very great.

In 1889 telephone sets were interconnected automatically. Further development improved the switching system and more telephone constructions were used.

The number of telephones to be interconnected increased and large cities needed more switchboard offices. Therefore the interconnection problem was of great importance. Central offices grew in number.

Transmitter

When speaking over the telephone, we speak into the microphone or transmitter. The transmission of sounds over a distance is the transmission of oscillations. The frequency of the transmitted oscillations must be constant.

The microphone or transmitter consists of microphone housing, carbon chamber, carbon diaphragm, carbon granules, insulating spacer, and conductor.

The current passes through the diaphragm, carbon chamber and carbon granules. The sound pressure on the diaphragm varies the pressure on the granules of carbon. These granules either make more contacts and decrease the resistance of the granules, or make fewer contacts and increase the resistance.

Sound waves produce oscillations of the same frequency as those of the sounding body. At these both the transmitter resistance and the current in the circuit will change.

Receiver

The varying current passes through the receiver connected to a network. The receiver consists of electromagnet coils, a steel magnet and a diaphragm. The diaphragm, magnets and coil are housed in a plastic cap.

A variable current passing through the magnet's coils changes the position of the diaphragm; it makes it vibrate. The frequency of these oscillations is the same as that of the transmitter. Therefore, the receiver produces the same sounds which are spoken into the microphone.

Telephone set protection

Lines serving telephone sets may have contacts with power lines or with lightning. Therefore telephone sets and their lines need protection, and protector units serve as protection devices.

Usually a protector unit consists of carbon protector blocks connected between each wire of the line and the ground. Fuses are also used on the protector blocks; they protect protector blocks against power contact currents.

A fuse is an imporant part of protector blocks. Without it power contact currents may overheat the protector or its ground conductor. Sometimes fuses are not used. A fuse is not used if the building is served by insulated wires that are connected to metal-sheathed cables on the line pole.

The fax

Pictures can be transmitted over telephone by sound signals. A new appratus does this by „looking'' at the picture and sending what it sees over the telephone to an apparatus at the receiving end, which then converts the sound signals back into the picture.

At the transmitting end, the photograph, picture or document is put into the apparatus. At the receiving end the reproduction appears on paper. Usually a photograph takes six minutes to be received and reproduced.

In the apparatus optical devices begin rotating and picking up reflected light which passes through a filter. This is how the apparatus works.

III. Answer the following questions:

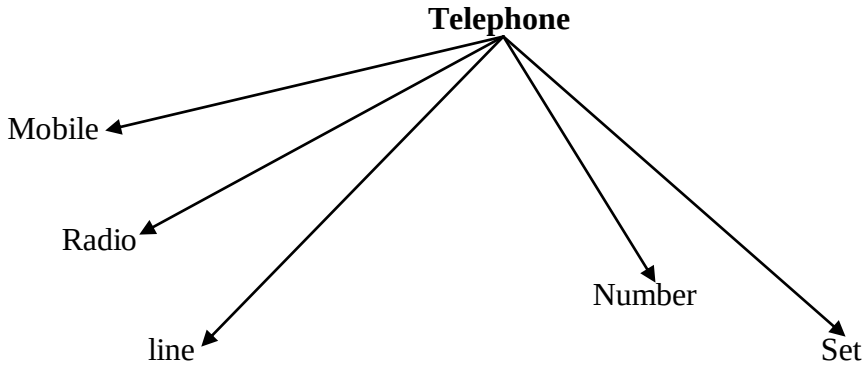
1. By what means is speech transmitted over a distance?
2. By what means are electric waves carried over a distance?
3. By what means are two telephone sets connected?
4. What parts does a telephone set include?
5. What parts does a receiver include?
6. What parts are linked to a common circuit?
7. What is the transmission of oscillations?
8. How many parts does the transmitter consist of?
9. What parts does current pass through?
10. What is the frequency of oscillations produced by sound waves?
11. Why does the receiver reproduce the same sounds which are spoken into the microphone?
12. Why do telephone sets need protection?
13. What units serve as protection device?
14. How can pictures be transmitted by telephone?

IV. Activities

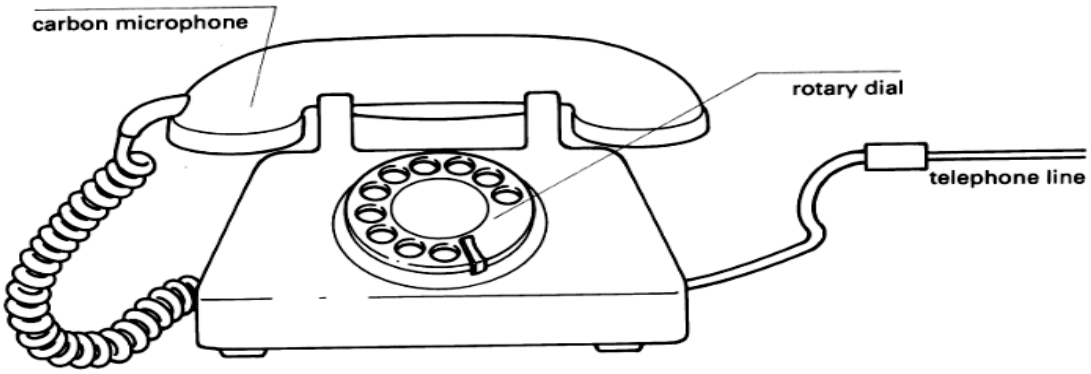
1. Read the following examples and translate them. Make sentences of your own:

- You can reserve seats **over the telephone**.
- I need **to make a telephone call**.
- He's **on the telephone** at the moment.
- I **was about to phone** the police.
- You'**re wanted on the phone**.(smb. wants to speak to you).
- She **is speaking to smb. by telephone** now.

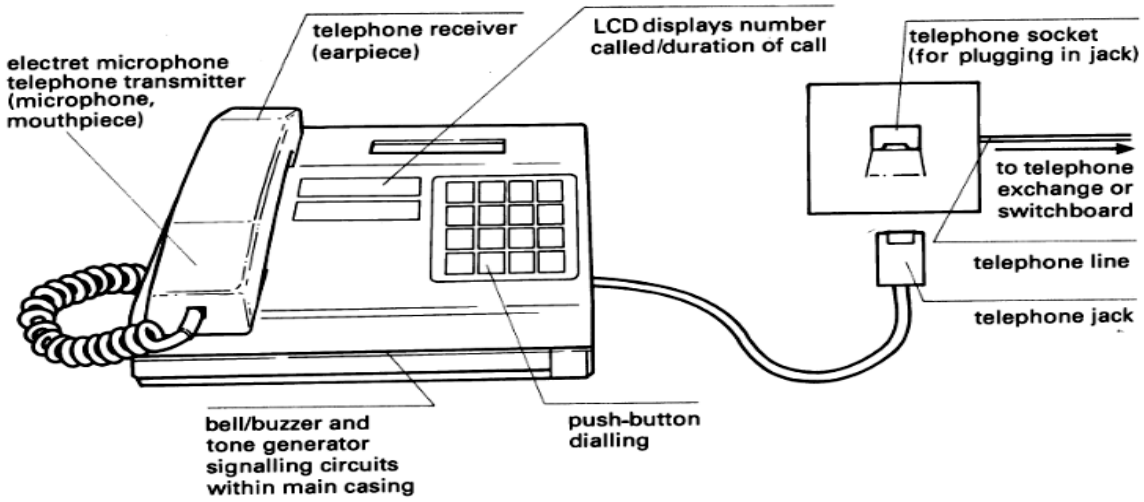
2. Write all possible words connected with the word „*telephone*" (adjectives, nouns, verbs**):** Eg.



3. Study these diagrams of old and new phones. Make a list of any differences. Compare your list with your partner:



older type telephone using rotor dialling, which generates pulses to code digits defining destination



typical push-button type telephone (faster dialling using buttons, which code dialled digits into voice frequency tones to signal destination number).

Language study:

Describing parts of apparatus and their meaning

*The telephone set **consists of** a transmitter, an electric network in addition to the receiver.

is composed of

Using comprise, we can start our description with the parts:

*A transmitter, an electric network in addition to the receiver **comprise** the telephone.

We can describe the links between each device using these expressions:

*The microphone and telephone **are connected to** a common circuit.

are linked to

4. Make up sentences using the expressions above and the active words from the text:

5. Put each verb in brackets in the correct tense and form:

Many changes ----------(to take place) in telephone design in recent years. Formerly, telephones ---------(to have) rotary dials. A pulse ---------(to signal) each dialled number. Now,

push-buttons---------(to replace) dials. Each button--------(to trigger) a different audio-frequency tone. This---------(to know) as multi-frequency dialling.

Also, the handset---------(to change). Old models----------(to contain) carbon microphones, which----------(to be) inexpensive and robust but noisy. Today, moving-coil and eletric devices----------(to replace) the old microphones.

Advances in technology----------(to allow) additional features to be added to phones. Most now----------(to contain) memories to store frequently-used numbers. Some telephone manufacturers----------(to add) LCDs which----------(to display) dialled numbers and----------(to indicate) the duration of calls.

6. Telephone expressions:

Finding your correspondent:	Can I / I'd like to speak to Ann, please.
	Can you put me through to Peter Smith?
	Hello, is that Mr.Carter?
Finding your correspondent:	Can I / I'd like to speak to Ann, please.
	Can you put me through to Peter Smith?
	Hello, is that Mr.Carter?
Identifying yourself:	This is Paul Simon (speaking).
	Paul Simon here.
Identifying the caller:	Who's calling / speaking, please?
	Could you give me your name, please?
	Which company are you from?
Asking caller to wait:	Hold on, please / Hold the line, please.
	I'm trying to connect you.
	Could you call back later?
	Can Mr.Simon call you back?
Explaining absence:	I'm afraid / I'm sorry, but he is in a meeting /
	with a client / off sick / on holiday.
Leaving a message:	Could you take a message?
	Could / Can I leave a message?
Taking a message:	Can I take a message?
	Would you like to leave a message?
	I'll pass on the message.
	I'll give him / her the message.
Dealing with problem:	I think you've got the wrong number.
	Could you speak up – it's a bad line.
	Could you speak more slowly, please?

7. Work in pairs. Make up dialogues using the expressions above:

V. Round up and Writing Practice

1. Translate into English:

1. Telefonul este un aparat ce reproduce sunete la distanţe mari.
2. Emiţătorul este format din cutia microfonului, camera de cărbune, diafragma de cărbune, granule de cărbune, izolator şi conductor.
3. Atît microfonul cît şi receptorul sînt unite la un circuit comun la un aparat la celălalt capăt al firului.

4. De obicei, un protector constă din blocuri protectoare de carbon conectate cu fiecare fir al liniei şi cu pământul.
5. Liniile care servesc aparatele telefonice pot avea contacte cu linii de înaltă tensiune sau fulgerul. Deaceea aparatele telefonice şi liniile lor au nevoie de protecţie.
6. Cînd este format un număr, pulsaţiile se deplasează prin cabluri de cupru ce leagă aparatul de o centrală telefonică locală.
7. Un telefon este compus dintr-un emiţător, un receptor şi un disc sau un mecanism dotat cu butoane pentru formarea numerelor.
8. Emiţătorul transformă sunetul în curent electric, pe cînd receptorul transformă acel curent în sunet.
9. Variaţia atracţiei magnetului asupra soneriei determină diafragma să vibreze, transmiţînd unde sonore auzite ca voci umane.
10. La centralele digitale, semnalele primite de la un post telefonic sunt întîi transformate în modele digitale de pulsaţii.

2. Retell the text:

VI. Memorize and comment the following quotations :

- If nine out of ten things you do fail, do ten times more.
- Luck is nothing, wisdom is wall.

VII. Read, translate and retell this text:

HOW SOUNDS ARE PRODUCED

Sounds are produced by the vibrations of matter. If sound vibrations are regular, they are pleasant to the ear and are known as musical sounds.

One can make matter vibrate in different ways. You can strike wires with a hammer. You can set air in vibration with your lips, you can even make gases vibrate. When you wave your hands back and forth they are vibrating in a way. However no sound is heard because the vibrations are not fast enough.

A dog can respond to sounds that you cannot hear because its ears are sensitive to higher rates of vibration than you can receive.

A vibrating object makes the air around it vibrate. When a body vibrates, it sets up a wave motion in the surrounding air. The waves are carried in all directions from the vibrating body.

They move as water waves move away from the spot where you have thrown a stone into the water. The difference between these two types of waves is that sound waves travel in all directions, while water waves travel only on the surface of the water.

The loudness of a sound depends on the amount of matter that vibrates. The waves are higher in water if you drop a large stone because more water is suddenly pushed aside. In the same way, the more air an object causes to vibrate, the louder will be the sound. Loudness is due to amplitude; the amplitude is the height of the wave from the center to the top or bottom part of the wave. As the height of the wave becomes less as it moves away, so the loudness of sound decreases as you move away from the source. When sounds are made louder, as in a radio amplifier, the wave amplitude is increased. This is done by using a greater amount of energy to produce the sound vibrations.

The number of times an object vibrates per second is its frequency of vibration. The frequency of vibration determines the pitch of a sound. By pitch we mean how high or low the sound is. If you strike a tuning fork against your hand or knee, its prongs will vibrate 256 times a second. No matter how hard you hit the fork, it will still vibrate 256 times a second. The pitch of the

tone will stay the same. What did you change when you hit the fork harder? How might you change the pitch of the tuning fork?

A wave length is the distance from the top of one wave to the top of the next succeeding wave. When you strike a tuning fork, the rate of vibration (frequency) and the wave length are constant. The amplitude of loudness of the sound depends on the force of the blow.

Sound waves are usually carried to our ears by the air. Have you heard the shot of a gun fired at quite a distance from you? How did the sound waves get from the gun to your ears? You probably have noticed that when you strike two stones against each other under water, you can hear the sounds produced under water.

Gases, liquids, and solids carry sound waves. Sound travels in air at a speed of approximately 1,100 feet per second. When you see a flash of lightning a mile away, the speed of light is such that the flash reaches your eye almost instantly. The sound of the resulting thunder reaches your ear later. By using an accurate stop watch, you can measure the interval between flash and thunder.

Sound waves travel faster in water, and still faster in solids such as wood, stone, and iron. When the temperature of air rises, the speed of sound increases. Sound travels slower at high altitudes than it does near the earth's surface. Why?

Sound waves can be reflected. You no doubt have noticed that when you shout toward a distant wall, the sound is reflected back to you; we call sounds reflected in this way echoes.

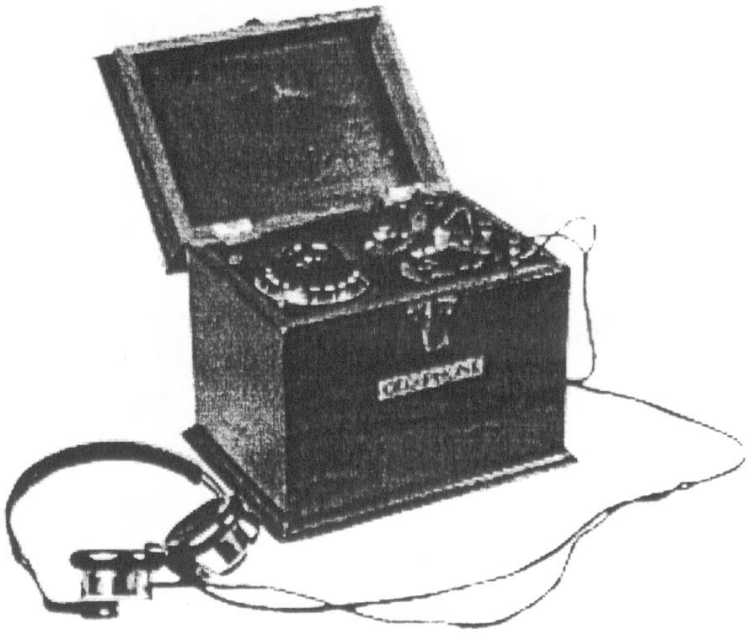
The ear cannot distinguish between direct sound and its reflected. sound if they are less than one-tenth of a second apart. Sounds in small rooms are reflected back in time to be mixed with the original sound, and thus there is usually no noticeable echo. If the room is more than 55 feet long, echoes are produced which interfere with the original sounds.

Auditoriums are now built with rounded corners and few large flat surfaces. This prevents sound waves from being reflected to any position.

Some fiber boards having many holes are used to soundproof rooms. Again the waves are either absorbed or scattered. So there is very little reflection.

We find today that in modern buildings architects use methods and materials which reduce echoes and favour good sound transmission.

Unit 4: The radio



I. Vocabulary:

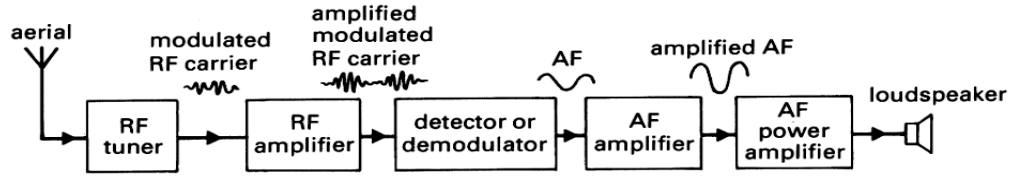
***Radio (set)*:** device for receiving radio frequency signals - (*radiou*).
***Wave*:** the form that some types of energy such as heat, sound, light, etc. take as they move: *radio / sound /ultrasonic waves* - (*undă*).
***Radiation*:** heat, energy, etc. that is sent out in the form of rays: *ultraviolet radiation*; *electromagnetic radiation from power lines - (radiaţie)*.
***To charge*:** to pass electricity through sth. so that it is stored there - (*a încărca*).
***Frequency*:** how often a pattern is repeated every second. - *(frecvenţă*)
Radio frequency - frquency between 100kHz and 300GHz - (*frecvenţă radio*).
***Spectrum*:** a range of sound waves or several other types of wave.
***Antenna** or **aerial*:** device for collecting or sending out signals being transmitted through free space - (*antenă*)
***Range*:** 1.selection between an upper and lower limit;
2. the maximum distance a wave can travel - (*rând; distanţă*).
***Hertz (Hz)*:** (cycles per second): basic unit of frquency.
***Rays*:** a narrow beam of light, heat or other energy: *the sun's rays, ultraviolet rays, gamma rays, x-ray* - (*raze de soare, ultraviolete,gama, x*).
***X-ray*:** a type of radiation that can pass through objects that are not transparent and make it possible to see inside them.
***Gamma rays*:** rays of very short wavelength sent out by some radioactive substances.
***Photon*:** a unit of electromagnetic energy - *(foton*).

***Feasible*:** posibil, relizabil
***Scattering seeds*:** a împrăştia seminţe
***To scout*:** a cerceta
***Fleet*:** flotă
***To sink*:** a scufunda
***To relay*:** a retransmite
***Advent*:** venire, începere.

Words and expressions to be remembered:

radio waves,
electromagnetic radiation,
charged object,
radio frequency,
lectromagnetic spectrum,
alternating current,
antenna, range,
visible light,
oscillating electromagnetic field,
electrical conductor,
audio signals,
broadcasting.

Do you know the construction of the radio set? Look at this figure and describe the block diagram of a radio:



II. Read the text: The Radio

Radio waves are a form of electromagnetic radiation, created whenever a charged object accelerates with a frequency that lies in the radio frequency(RF) portion of the electromagnetic spectrum. In radio, this acceleration is caused by an alternating current in an antenna. Radio frequencies occupy the range from a few tens of hertz to a few hundried gigahertz.

Other types of electromagnetic radiation, with frequences above the RF range, are infrared, visible light, ultraviolet, X-rays and gamma rays. Since the energy of an individual photon of radio frequency is too low to remove an electron from an atom, radio waves are classified as non-ionizing radiation.

Electromagnetic radiation travels by means of oscillating electromagnetic fields that pass through the air and the vacuum of space equally well, and does not require a medium of transport. When radio waves pass an electrical conductor, the oscillating electric or magnetic field induces an alternating current and voltage in the conductor. This can be transformed into audio or other signals that carry information. The word ‚radio' is cased to describe this phenomenon, and television, radio, radar, and cell phone transmissions are all classed as radio frequency emissions.

Originally, radio technology was called „wireless telegraphy", which shortened to „wireless". The prefix *radio-* in the sence of wireless transmission was first recorded in the word *radioconductor*, based on the verb *to radiate*. The noun „broadcasting" itself came from an agricultural term, meaning „scattering seeds". In Chinese, the term „wireless' is the basis for the term „radio wave" although the term for the device that listens to radio waves is literally „device for receiving sounds"

Many of radio's early uses were maritime, for sending telegraphic messages using Morse code between ships and land. The earliest users included the Japanese Navy scouting the Russian fleet during the Battle of Tsushima in 1905. One of the most memorable uses of marine telegraphy was during the sinking of the Titanic in 1912, including communications between operators on the sinking ship and nearby vessels, and communications to shore stations listing the survivors. Radio was used to pass on orders and communications between armies and navies on both sides in World War I; Germany used radio communications for diplomatic messages once its submarine cables were cut by British.

Broadcasting began to become feasible in the 1920s, with the widespread introduction of radio receivers, particularly in Europe and the United States. Besides broadcasting, point-to-point broadcasting, including telephone messages and relays of radio programs, became widespread in the

1920s and 1930s. Another use of radio in the pre-war years was the development of detecting and locating aircraft and ships by the use of radar(Radio Detection and Ranging). Today, radio takes many forms, including wireless networks, mobile communications of all types, as well as radiobroadcasting. Before the advent of television, commercial radio broadcasts included not only news and music, but dramas, comedies, variety shows, and many other forms of entertainment. Radio was unique among dramatic presentation that it used only sound.

III. Answer the following questions:

1. What are radio waves?
2. What other types of electromagnetic radiation with frquencies above the RF range do you know?
3. By what means electromagnetic radiation travel through the air?
4. What does it happen when radio waves pass an electrical conductor?
5. Which devices are classed as radio frequency emission?
6. How was the radio technology originally called?
7. What is the meaning of the word ,,broadcasting''?
8. What are the early uses of radio?
9. When did broadcasting begin to become feasible?
10. Where was the radio used in the pre-war years?
11. Which forms has the radio today?

IV. Activities

Language study:

Reduced time clauses

Study these two actions:

1. *Ground waves pass over sand.*

2. *Ground waves lose energy.*

We can link these actions to make one sentence, using a time clause:

When *ground waves pass over sand, they lose energy*.

Because the subject of both actions is the same- *ground waves*- there is a shorter method we can use to link the actions:

When *pass**ing** over sand, ground waves lose energy.*

When + **-ing** shows that Action 2 happens during the same period as Action 1.

Now study these two actions:

1. *The sky wave strikes the earth.*

2. *The sky wave bounces back again.*

Again we can link these actions to make one sentence, using a time clause:

When *the sky wave strikes the earth, it bounces back again.*

We can also link the actions in a shorter way:

On *strik**ing** the earth, the sky wave bounces back again.*

On + **-ing** shows that Action 2 follows immediately after Action 1.

1.Link these pairs of actions. Use short ways when this is possible:

1. **a** The switch is closed.
   b Current flows through the primary of the transformer.

2. **a** The radar signal strikes a plane.
   b The radar signal is reflected.
3. **a** A cell discharges quickly.
   b A cell may become hot.
4. **a** The TV receives signals from the remote control.
   b The TV follows your instructions.
5. **a** The radar receiver receives the reflected signal.
   b The signal is compared with the transmitted signal.
6. **a** You choose a course in electronics.
   b You think carefully about your future.
7. **a** Mikrowave signals strike a high building.
   b Microwave signals are deflected.
8. **a** You make a recording.
   b You should ensure the recording levels are satisfactory.
9. **a** The alarm detects an intruder.
   b The alarm triggers an audible warning.
10. **a** The remote control button is pressed.
    b The television set changes channel.

2.Fill in the missing words:

1. In ----------, this acceleration is caused by---------- in ----------.
2. Before the advent of ----------, commercial --------- ---------- included not only news and music, but dramas, comedies, and many other forms of ----------.
3. Radio ---------- are a form of ----------.
4. Many of radio's easily uses were ----------, for sending ---------- using ---------- between ships and land.
5. ---------- travels by means of ---------- that pass through the air and vacuum of space.
6. ---------- began to become ---------- in the 1920s, with the widespread introduction of ----------.
7. When ------- -------- pass an electrical ----------, the oscillating ---------- or ---------- field induces an ----------current and voltage in the ----------.
8. Radio ---------- occupy the ---------- from few tens of hertz to a few hundried ----------.

3.Put all possible questions to the following sentences:

1. Radio frquencies occupy the range from few tens of hertz to a few hundried gigahertz.
2. Broadcasting began to become feasible in the 1920s, with the widespread introduction of radio receivers.
3. Electromagnetic radiation travels by means of oscillating electromagnetic fields that pass through the air.
4. Another use of radio was the development of detecting and locating aircraft and ships.

V. Round up and Writing Practice

1.Translate the following sentences:

1.Undele radio sînt o formă a radiaţiei electromagnetice.
2.Oscilaţiile sînt induse în antenă şi în circuitul oscilator al radioului cu aceasi frecvenţă.
3. Părţile conponente ale radioului sunt: 1) amplificatorul de frecvenţă înaltă, 2) filtru de bandă, 3) demodulator (detector), 4) amplificator de frcvenţă joasă şi de putere, 5) difuzor, 6) antenă.
4. Alte tipuri de radiaţii de frecvenţă înaltă sînt: infraroşii, lumina vizibilă, ultraviolete, razele X şi gama.

5. Cînd undele radio se induc în conductor, se obţine un curent alternativ şi tensiune.
6. Cuvîntul ,,radio,, descrie însăşi fenomenul ce este utilizat în televizor, radiou, radar şi telefonul mobil şi sînt clasate ca emiţătoare radio.
7. Frecvenţele radio ocupă un diapazon de zeci de herţi pîna la sute de gigaherţi.
8. Radiocomunicaţia constă în transmiterea energiei cu o frecvenţă înaltă la distanţă de la emiţă tor la receptor fără fire.
9. Receptorul radio transformă undele primite şi noi le auzim ca vorbire, muzică sau semnale.
10. Undele electromagnetice se răspîndesc cu ajutorul cîmpurilor electromagnetice oscilatorii care trec prin aer şi vacum şi nu necesită un remediu de transport special.

2.Retell the text:

VI.Memorize and comment the following quotations:

- Wealth is nothing without health.
- What's done cannot be undone.

VII. Read, translate and retell this text:

RADIO WAVES

Radio or electromagnetic waves to be described in this text travel in space with the velocity of light and are known to consist of magnetic and electrostatic fields at right angles to each other and also at right angles to the direction of travel. One half of the electrical energy contained in the wave exists in the form of electrostatic energy, while the remaining half is in the form of magnetic energy.

The properties of a radio wave to be considered here are the frequency, intensity, direction of travel, and plane of polarization. The radio waves produced by an alternating current are found to vary in intensity with the frequency of the current and therefore are alternately positive and negative. The distance occupied by one cycle of such alternating wave is known to be equal to the velocity of the wave divided by the number of cycles that are sent out each second and is referred to as the wave length .'

We know the frequency to be usually expressed in kilocycles or in megacycles. A low - frequency wave has a long wave length while a high - frequency wave corresponds to a short wave length. The strength of a radio wave is measured in terms of the voltage stress produced in space by the electrostatic field of the wave and is usually expressed in microvolts per meter.

The actual stress to be produced at any point by an alternating wave varies sinusoidally from instant to instant, therefore the intensity of such a wave is considered to be equal to the value of the stress. The strength of the wave measured in terms of microvolts per meter of stress in space is the same voltage that the magnetic flux of the wave induces in a conductor 1 meter long, moving across this conductor with the velocity of light. .

Thus, the strength of a wave is not only the dielectric stress to be produced in space by the electrostatic field, but it also represents the voltage, that the magnetic field of the wave induces in moving across the conductor. The voltage stress to be produced by the wave can be considered as resulting from the movement of the magnetic flux of the same wave.

The minim um field strength required to give good reception of a wave is known to depend upon a number of factors, such as frequency, type of signal, and amount of interference. A plane parallel to the mutually perpendicular lines of electrostatic and electromagnetic flux is called the wave front. The wave always travels in the direction at right angles to the wave front.

Unit 5: Television

I. Vocabulary:

***Channel*:** group of frequencies used for communications - (*canal*).
***Photoconductivity*:** the process by which photographs can be transmitted - (*fotoconductivitate*).
***Photograph*:** a picture that is made by using a camera that has a film sensitive to light inside it - (*fotografie, imagine*).
***To record*:** to make a recording - *(a înregistra, a înscrie*).
- ***record player*:** device for playing vinyl record recordings - (*magnetofon*).
- ***Recorder*:** machine use to record sound or video signals on magnetic tape.
- ***Tape recorder*:** machine for recording sound using magnetic tape - (*magnetofon*).

***To scan*:** move a signal steadily across an area - (*a scana, a copia*).
***Image*:** a picture of sb./sth seen through a camera, or on a television or computer - (*imagine*).
***Stereo*:** the system for playing recorded music, speech, etc. in which the sound is directed through two channels.
***To decode*:** to convert a digitally coded signal back to its original form - (*a decoda*).
- ***Decoder*:** electronic circuit for converting digitally coded signals back to their original form - (*decoder*).

***High definition television*:** television system which provides clearer, more detailed, high quality images and very high quality sound - (*televiziune de înaltă fidelitate)*.

***Display*:** 1) the words, pictures, etc. shown on a computer screen;
2) an act of performing a skill or of showing sth happening, in order to entertain - (*expoziţie, prezentare, expunere)*.
***Cable television*:** systems which transmits video signals using cables - (*televiziune prin cablu*).

Words and expressions to be remembered:

Broadcast material,
moving pictures,
photoconductivity,
scanning disk,
time series signal representation,
to reverse the scanning process,
coherent image,
silhouette image,
color television,
video cassets,
laserdiscs,
DVD,
closed-circuit television,
digital television broadcasting technology,
to decode broadcast signals,
to lack a tuner,
high-definition television.

II. Read the text: Television

Television is a telecommunication system for broadcasting and receiving moving pictures and sound over a distance. The term has come to refer to all the aspects of television from the television set to the programming and transmission. The word is derived from mixed Latin and Greek roots, meaning „far sight".

Television was not invented by a single person, but by the conributions of several individuals. The origins of what would become today's television system can be traced back to the discovery of the photoconductivity of the element selenium by Willoughby Smith in 1873 followed by the work on the telectroscope and the invention of the scanning disk by Paul Nipkow in 1884. All practical television systems use the fundamental idea of scanning an image to produce a time series signal representation. That representation is then transmitted to a device to reverse the scanning process. The final device, the television (or TVset), relies on the human eye to integrate the result into a coherent image.

Electromechanical techniques were developed from the 1900s into the 1920s, progressing from the transmission of still photographs, to live still duotone images, to moving duotone or silhuette images, with each step increasing the sensitivity and speed of the scanning photoelectric cell. John Logie Baird gave the world's first public demonstration of a working television system that transmitted live moving images with tone graduation (grayscale) on 26 January 1926. On 3 July 1928 he demonstrated the world's first color television transmission.

Commercially available since the late 1930s, the television set has become a common communications receiver in homes, businesses and institutions, particularly as a source of entertainment and news. Since the 1970s the availability of video cassettes, laserdiscs, DVDs and Blu-ray discs, have resulted in the television set frequently being used for viewing recorded as well as broadcast material.

Although other forms such as closed-circuit television are in use, the most common usage of the medium is for broadcast television, which was modeled on the existing radio broadcasting systems developed in the 1920s, and uses high-powered radio-frequency transmitters to broadcast the television signal to individual TV receivers.

Broadcast TV is typically disseminated via radio transmissions in the 7-1000 megahertz-range of the FM frequency band. Signals are now often transmitted with stereo and/or surround sound in many countries. Until the 2000s broadcast TV programs were generally recorded and transmitted as an analog signal, but in recent years public and commercial broadcasters have been progressively introducing digital television broadcasting technology.

A standard television set comprises multiple internal electronic circuits, including those for receiving and decoding broadcast signals. A visual display device which lacks a tuner is properly called a monitor, rather than a television. A television system may use different technical standards such as digital television(DTV) and high-definition television(HDTV). Television systems are also used for surveillance, industrial process control, and guiding of weapons, in places where direct observation is difficult or dangerous.

III. Answer the following questions:

1. What does the word ,,television'' mean?
2. Who invented television?
3. What are the origins of today's television system?
4. What was happened on 26 January 1926?
5. When was the world's first color television transmission demonstrated?
6. What was the role of television in 1930?
7. Which devices were invented for viewing recorded broadcast material?
8. How is broadcast TV dissiminated?
9. Which innovations have commercial broadcasters introduced in recent years?

10. What does a standard television set comprise?
11. What is the importance of television systems in industry?

IV. Activities

1. Carry out a survey to find out the viewing habits of your group and their ideas about television:

1. How many hours of television do you watch each week?
2. When do you watch television?
3. What sort of programmes do you watch?
4. Which television station do you watch most/least often?
5. How do you think television will change in the future?
6. What advantage does television have?
7. What disadvantages does television have?

2. Fill in the missing words:

1. A standard ---------- comprises multiple internal ---------- circuits, including those for receiving and decoding ---------- signals.
2. Other forms such as ---------- -circuit ----------are in use.
3. A television system may use different ---------- standards such as ----------television and ---------- --------television.
4. Television is a ---------- system for broadcasting and receiving ---------- pictures and --------- over a distance.
5. All practical ---------- ---------- use the fundamental idea of scanning an ---------- to produce a time ---------- signal ----------.
6. The term has come to refer to all aspects of ---------- from the --------- set to the --------- and ----------.
7. The final ---------- relies on the human eye to integrate the result into a ----------.
8. On 3 July 1928 John --------- demonstrated the world's first ---------- ----------transmission.
9. Signals are now often ---------- with --------- and /or surround ---------- in many countries.

3. Put the jumbled words in the correct order:

1. the fundamental idea, to produce, practical, a time series, use, of, signal representation, scanning, television systems, an image.
2. mixed Latin, the word, ,,far sight'', from, and, meaning, roots, is derived, Greek.
3. countries, are transmitted, signals, stereo, many, often, surround sound, now, or, and in, with.
4. a television, a visual display, a monitor, which, than, is called, rather, device, properly, a tuner, lacks.
5. has become, business, as a sourse, the television set, particularly, a common communications receiver, and, of entertainment, in homes, institutions, news, and.

4. Match the words from column A with those from column B to obtain word conbinations:

A	B
1. fundamental	1. system
2. color	2. material
3. telecommunication	3. transmitters
4. video	4. television
5. television	5. image

6. broadcast	6. TV set
7. duotone	7. display
8. radio	8. circuits
9. visual	9. set
10. digital	10. idea
11. electronic	11. television
12. standard	12. cassets
13. radio- frequency	13. sound
14. stereo	14. transmission

Language study

Impersonal Constructions

A 1. **It** is easy to understand this rule**.**
2. **It** was desirable to compare the results obtained.
3. **It** is necessary to find some new electronic devices.

B 1. **One** can say that there are unlimited sources of energy.
2. **One** could not obtain good results without repeating the test.
3. **One** may mention here that the first telephone set was very simple.

C 1. **They** employ different methods to obtain better results.
2. **They** say that lasers will be widely used in the near future.

D 1**. It is supposed** that people learnt to protect their houses from thunderstorms years ago.
2. **It is said** that these substances have similar properties.
3. **It is well known** that one form of energy can be converted into another.

5. Make up sentences using the Impersonal Constructions and the active vocabulary.

V. Round up and Writing Practice

1. Translate into English:

1. Televiziunea este un sistem de comunicaţii pentru prezentarea şi primirea imaginilor în mişcare şi a sunetului la distanţă.
2. Impulsurile electrice sunt amplificate de amplificatorul video, apoi semnalul video modulează mesagerul de înaltă frecvenţă a transmiţătorului şi este radiat în spaţiu.
3. La receptorul televiziunii imaginea şi semnalele audio sînt alese simultan de o singură antenă.
4. Emiţătorul de sunet este modulat în frecvenţă şi simultan transmite sunetul care acompaniază imaginea.
5. Televiziunea ne aduce în casele noastre ştirile de ultimă oră, ne prezintă concerte, filme artistice şi documentare, interviuri, spoturi publicitare ş.a.
6. Sînt două canale de amplificare ale frecvenţelor intermediare, unul este pentru semnalul video şi altul pentru sunet.
7. Transmisia coloră conţine două componente de bază, strălucire (luminozitate) şi informaţia coloră.
8. Roşu, verde şi albastru sint culorile alese pentu televiziunea coloră.

2. Retell the text.

VI. Memorize and comment the following quotations:

- Every man is the architect of his fate.
- A friend in need is a friend indeed.

VII. Read, translate and retell this text:

SATELLITES AND TELECOMMUNICATIONS

Our world is becoming an increasingly complex place in which, we are very dependent on other people and organizations. An event in some distant part of the globe can rapidly and significantly affect the quality of life in our home country.

This increasing dependence, on both a national and international scale, forced us to create systems that can respond immediately to dangers, enabling appropriate defensive or offensive actions to be taken. These systems are operating all around us in military, civil, commercial and industrial fields.

A worldwide system of satellites has been created and it is possible to transmit signals around the globe by bouncing them from one satellite to an earth station and then to another satellite and so on.

Originally designed to carry voice messages, they are able to carry hundreds of thousands of separate simultaneous calls. These systems are being adopted to provide for business communications, including the transmission of voice and facsimile messages, data and video data.

It is probable that future wide use of satellites in the area of telecommunications will provide a great variety of information services to transmit directly into our homes, possibly including personalized electronic mail. The electronic computer is at the heart of many such systems, but the role of telecommunications is not less important. There will be a further convergence between the technologies of computing and telecommunications. The change of this kind will lead us to the database culture, the cashless society, the office at home, the gigabit-per-second data network.

One cannot doubt that the economic and social impact of these concepts will be very significant. Already, advanced systems of communication are affecting both the layman and the technician.

The new global satellite-communication systems offer three kinds of service.

The first one is voice messages. Satellite telephones are able to make calls from anywhere on the Earth to anywhere else. That makes them especially useful to use in remote, third-world villages (some of which already use stationary satellite telephones), for explorers. Today's mobile phones depend on earth-bound transmitters, whose technical standards vary from country to country. Satellite telephones can solve this problem, but it is not a cheap service.

The second service is messaging. Satellite messages have the same global coverage as satellite telephones, but carry text alone, which is extremely useful for those with laptop computers. As we see, the Internet works in space too. The only problem for ordinary users is one-way transmissions. This problem is solved by using combine transmissions, when you make a call using land communications and receive ordered information through your satellite plate.

The third service is tracking. Voice and messaging systems also tell their users where they are to within a few hundred meters. Combined with the messaging service, the location service could help rescue teams, to find lost adventurers, the police to find stolen cars, exporters to follow the progress of cargoes and so on. Satellite systems provide better positioning information to anyone who has a receiver for their signals.

To my thinking, satellite method of communication is the future for all kind of telecommunications.

Unit 6: Remote control

I. Vocabulary:

***Remote control*:** a device used to issue commands from a distance to televisions or other consumer electronics - (*telecomandă, operare la distanţă*).
***Track*:** narrow area on a disc or tape where recordings are stored - (*urmă, drum, linie*).
***Beam*:** narrow, straight path for electrons or radio waves - (*rază*).
***Piezoelectric crystal*:** naturally occuring silicon oxide crystal which vibrates at a fixed frequency when an AC voltage is applied to it. It is used in oscillators to produce a very stable resonant frequency - (*cristal piezoelectric*).
***To tune*:** to adjust a circuit to oscillate at a particular frequency - (*a acorda, a potrivi*).
***To trigger*:** short signal which causes a process to be started - (*a opri, a porni*).
***Channel* :** 1) group of frequences used for communications;
2) one side (left or right) of a stereo system.
***Sensor*:** devices which produces an electrical signal when it detects a particular form of energy - (*senzor*).

Words and expressions to be remembered:

remote control,
electronic device,
clicker, changer,
consumer devices,
to issue commands,
stereo systems,
DVD players,
dimmer,
executed commands,
wireless remote,
to push a button,
to struck a bar,
piezoelectric cristal,
oscillating electric current.

II. Read the text: Remote Control

A **remote control** is an electronic device used for the remote operation of a machine. The term remote control can be contracted to remote or controller. It is known by many other names as well, such as clicker and also the changer. Commonly, remote controls are Consumer IR devices used to issue comands from a distance to televisions or other consumer eletronics such as stereo systems, DVD players and dimmers. Remote controls for these devices are usually small wireless handheld objects with an array of buttons for adjusting various settings such as television channel, track number, and volume. In fact, for the majority of modern devices with this kind of control, the remote contains all the function controls while the controlled device itself only has a handful of essential primary controls. Most of these remotes communicate to their respective devices via infrared(IR) signals and a few via radio signals. They are usually powered by small AAA or AA size batteries.

One of the earliest examples of remote control was developed in 1898 by Nikola Tesla.

In 1903, Leonardo Torres Quevedo presented the Telekino at the Paris Academy of Science, accompanied by a brief, and making an experimental demonstration. The Telekino consisted of a

robot that executed commands transmitted by electromagnetic waves. It constituted the world's first apparatus for radio control.

The first remote-controlled model aeroplane flew in 1932, and the use of remote control technology for military purposes was worked intensively during the World War II.

By the late 1930s, several radio manufacturers offered remote controls for some of their higher-end models. Most of these were connected to the set being controlled by wires, but the Philco Mystery Control (1939) was a battery-operated low-frequency radio transmitter, thus making it the first wireless remote control for a cosumer electronic device.

The first remote intended to control a television was developed by Zenith Radio Corporation in 1950. The remote-officially called „Lazy Bones" was connected to the television set by wire. To improve the cumbersome setup, a wireless remote control called „Flashmatic" was developed in 1955 which worked by shining a beam of light into a photoelectric cell. Unfortunately, the cells did not distinguish between light from the remote and light from other sources and the Flashmatic also required that the remote control be pointed very accurately at the receiver.

In 1956 Robert Adler developed „Zenith Space Command", a wireless remote. It was mechanical and used ultrasound to change the channel and volume. When the user pushed a button on the remote control it clicked and struck a bar, hence the term „clicker". Each bar emitted a different frequency and circuits in the television detected this noise. The invention of the transistor made possible cheaper electronic remotes that contained a piezoelectric crystal that was fed by an oscillating electric current at a frequency near or above the upper threshold of human hearing, though still audible to dogs. The receiver contained a microphone attached to a circuit that was tuned to the same frequency.

The impetus for a more complex type of TVRC came in the late 1970s with the development of the Ceefax teletext service by the BBC. Most commercial remote controls at that time had a limited number of functions, sometimes as few as three: next channel, previous channel, and volume/off. This type of control did not meet the needs of teletext sets where pages were identified with three-digit numbers. A remote control to select teletext pages would need buttons for each number from zero to nine, as well as other control functions, such as switching from text to picture, and the normal television controls of volume, station, brightness, colour intensity and so on. So BBC engineers began talks with one of two television manufacturers which led to early prototypes in around 1977-78 that could control a much larger number of functions. Later, in 1987, it was created a remote control which could „learn" remote signals from other different devices.

By the early 2000s, the number of consumer electronic devices in most homes greatly increased, along with the number of remotes to control those devices. To operate a home theater as many as five or six remotes may be required, including one for cable or satellite receiver, VCR or digital video recorder, DVD player, TV and audio amplifier.

Most control remotes for electronic appliances use a near infrared diode to emit a beam of light that reaches the device. This infrared light is invisible to the human eye, but picked up by sensors on the receiving device. Video cameras see the diode as if it produces visible purple light.

With a single channel (single-function, one-button) remote control the presence of a carrier signal can be used to trigger a function. For multi-channel (normal multi-function) remote controls more sophisticated procedures are necessary: one consists of modulating the carrier with signals of different frequency. After the demodulation of the received signal, the appropriate frequency filters are applied to separate the respective signals. Nowadays digital procedures are more commonly used. One can often hear the signals being modulated on the infrared carrier by operating a remote control in very close proximity to an AM radio not tuned to a station.

III. Answer the following questions:

1. What is a remote control?
2. Which functions does a remote control contain?
3. When was the earliest example of a remote control developed?

4. What is Telekino?
5. Which is the communication mechanism between the remote and the receiving device?
6. Who developed the first wireless remote control? How did it work?
7. When was the first TV remote control developed?
8. What was the impetus that made possible for a more complex type of TVRC?
9. Which functions does a modern remote control contain?
10. Can a remote control control many devices at the same time?

IV. Activities

1. Study this diagram .What are the main parts of a remote control? What is the meaning of each button?

VCR DVD SAT AMP CD

'Audio- and Video equipment keys'.

Select your computer or other pripherals

● ◀◀ ■ ▶ ▶▶
Audio and Video equipment keys,

Instant record

Time display
The time is displayed on the screen.

Surround mode
Press this key repeatedly to select on/off.

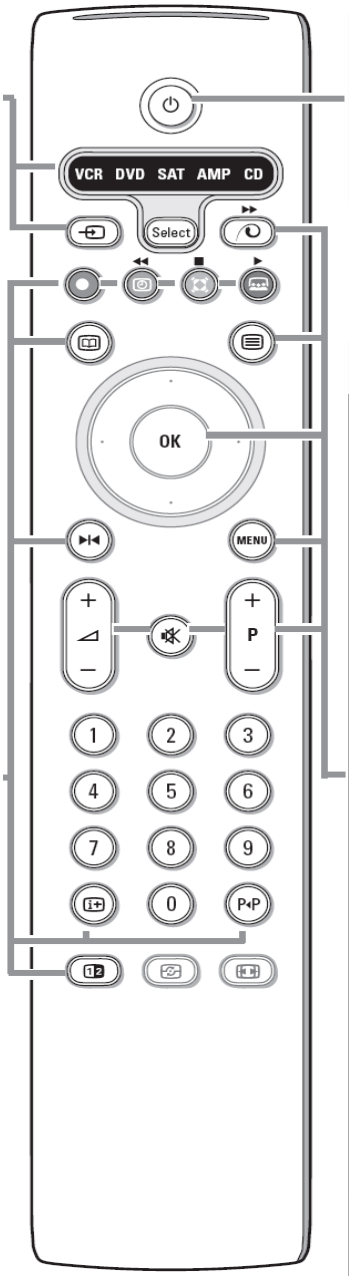
Cinema Go

NEXTVIEW On/Off
Press to show NEXTVIEW/ Teletext Guide on the right half of the screen.

Freeze/Replay/Photo finish

On Screen information
Press to display information about the selected TV channel and programme.

Smart surf / NEXTVIEW themes
With this key you can easily switch between 2 up to 9 different TV channels or sources or quickly select TV programmes if NEXTVIEW with defined themes is broadcast. See General, Smart surf.
Press the **OK** key or wait for the time out to dismiss the Smart surf display.



Standby

Press to switch the TV on or off. When switched off, a red indicator on the TV lights up.When acquiring NEXTVIEW, an orange indicator lights up and after a period of max. 1 hour the TV is switched to full standby and the red indicator lights up.

Pixel Plus demo on/off
In the right part Pixel Plus and Digital Natural Motion are switched on.

Teletext On/Off
Press the bkey to show teletext on the right half of the screen.

OK Press this key
- to activate your choice, when in the menus.
- to display the programme list.

To adjust the volume.

Interrupt the sound or restore it.

P Programme selection
To browse through the TV channels and sources stored in the favourite list.

0/9 Digit keys
To select a TV channel.
For a two digit programme number, enter the second digit before the dash disappears. To switch immediately to a selected one digit TV channel, keep the digit key pressed a bit longer.

2. Match the English words from column A with their Romanian equivalents from column B:

A	B
1. new user	1. sunet de înaltă frecvenţă
2. new program	2. administrare la distanţă
3. big image	3. imagine mare
4. high sound	4. etapă dificilă
5. simple instruction	5. calculator aflat la distanţă
6. remote control	6. spaţiu de lucru activ
7. active desktop	7. contrast puternic
8. difficult step	8. instrucţiune simplă
9. high contrast	9. program nou
10. remote computer	10. utilizator nou
11. remote administration	11. telecomandă

3. Form sentences using the words given below:

1. remote control, receiver, infrared, device.
2. battery, remote, power, modern.
3. wireless, needless, easy, remote, develop.
4. function, complex, TVRC, teletext.
5. machine, operate, electric, clicker, distance.
6. other control functions, to select teletext pages, buttons, normal television controls.

4. Put all possible questions to the following sentences:

1. Most remote controls communicate to their respective devices via infrared signals.
2. The first remote for TV was developed in 1950 and was connected to it by wire.
3. The invention of the transistor made possible cheaper electronic remotes.
4. In 1987 was created a remote that could ‘’learn’’ remote signals from other devices.
5. In 1903 Leonardo Torres Quevedo presented the Telekino at the Paris Academy of Science.

5. Find the wrong statements and correct them:

1) The remotes are usually powered by solar energy
2) The earliest example of remote control was developed in 1989 by Nikola Tesla.
3) The first remote to control television was wireless.
4) The modern remote controls have limited number of functions.
5) In 1987 was created a flying remote control.
6) A remote control is a mechanical device used for the remote operation of a machine.
7) Last time the number of consumer electronic devices in most homes greatly decreased.
8) Each bar emitted the same frequency and circuits in the television detected this noise.

Language study:

PASSIVE VOICE

Present Tence	Active:	He ***writes*** a letter.
	Passive:	A letter ***is written*** by him**.**
Past Simple	Active:	He ***wrote*** a letter.
	Passive:	A letter ***was written*** by him.
Future Simple	Active:	He ***will write*** a letter.
	Passive:	A letter ***will be written*** by him.

Present Progressive	Active:	He ***is writing*** a letter.
	Passive:	A letter ***is being written*** by him.
Past Progressive	Active:	He ***was writing*** a letter.
	Passive:	A letter ***was being written*** by him.
Present Perfect	Active:	He ***has written*** a letter.
	Passive:	A letter ***has been written*** by him.
Past Perfect	Active:	He ***had written*** a letter.
	Passive:	A letter ***had been written*** by him.
Future Perfect	Active:	He ***will have written*** a letter.
	Passive:	A letter ***will have been written*** by him.

6. Change the verbs from the Active Voice into Passive:

1. She *answered* the question.
2. They *will present* the report.
3. Peter *has translated* the text.
4. They *discover* new substances.
5. She *had passed* the exam before going to London.
6. He *will have finished* this work by the end of the week.
7. Somebody *has taken* my pen.
8. He *does* experiments every day.
9. She *will deliver* the goods.
10. I *was translating* this text.
11. Ann *is cooking* dinner now.
12. They *elaborated* this methods.

V. Round up and Writing Practice

1. Translate the following sentences:

1. Telecomanda este un dispozitiv electronic pentru transmiterea comenzilor la distanţă.
2. Majoritatea telecomenzilor au la baza funcţionării undele ultraviolete.
3. Primele telecomenzi erau conectate cu fire, pe cînd cele mai moderne, deja nu mai aveau nevoie de acestea.
4. Astăzi majoritatea dispozitivelor de uz casnic şi industriale pot fi controlate prin intermediul telecomenzilor.
5. Cu ajutorul telecomenzii televizorului putem efectua mai multe comenzi ca: schimbarea posturilor, volumul sunetului, şi deasemenea putem face schimbări în setările televizorului.
6. Folosirea ghidării de la distanţă a devenit în ziua de azi o necesitate care ne uşurează semnificativ munca.
7. Telechino era un robot ce executa comenzi transmise prin unde magnetice.
8. Prima telecomandă fără fir era mecanică şi folosea ultrasunetul pentru a schimba canalul şi volumul.
9. Receptorul conţinea un microfon ataşat la un circuit care era acordat la aceaşi frecvenţă.

2. Retell the text:

VI. Memorize and comment the following quotations:

- Two heads are better than one.
- Success comes to those who are too busy to look for it.

VII. Read, translate and retell this text:

THE USE OF ELECTROMAGNETIC WAVES

1. Many experiments having been conducted to discover the best types of radiation, a lamp producing sterilizing radiation was developed. The lamp has been applied to surgery, the radiation having been shown to be harmless to human flesh. By bathing the operating table in the rays it is possible to ensure sterility, its principle being the exclusion of germs in the modern operating theatre.

2. An interesting use is made of the longer waves. Waves between 10 and 100 miles in length can be used for melting metals without flame. The metal is placed in a cruicible which is inside the solenoid originating the waves. The latter being led into the metal, their absorption sets up secondary currents which result in heating the metal to such an extent that it melts. The coil carrying the current remains quite cold. One of the advantages of this apparatus is the case with which metals can be melted when the exclusion of air is necessary.

3. On the same principle it is possible to cook a dinner in a cold oven. A kettle may be boiled on ice. Some years ago there was a demonstration in which a beefsteak was frozen into a block of ice. Wireless waves were then passed and the meat was completely cooked without the ice being melted. In the same way fish were cooked in water, the water remaining perfectly cold.

4. Very long electromagnetic waves are also employed for examining the structure of the earth. The waves having a length of about 25 miles are sent downwards. When encountering a metallic ore they are absorbed and an electromagnetic field is set up. This can be measured on the surface of the earth and as a result depth of the ore. This method is now frequently used in geophysical prospecting.

5. The "radio knife" can be described here. In the so-called "radio knife" the heat is developed at the point of a needle acting as one of the electrodes, and becomes so great that the tissue is burned or cut. The electrode cuts as cleanly as an ordinary surgical knife, with the added advantage that the heat seals the tissues of nerves it is cutting, reduces shock, prevents bleeding and makes for easy healing. This knife is not suggested to take place of the scalpel for all operations, but no doubt it is of special value in certain fields, such as that of brain surgery.

Unit 7: Cell phone

I. Vocabulary:

***Short Message Service (SMS)*:** a message service offered by the GSM digital cellular telephone system.

***Packet switching*:** a method of efficient data transmission whereby the initial message is broken into relatively small units that are routed independently and subsequently reassembled - (*comutare de pachete*).

***Mulimedia Messaging Services (MMS)*:** a feature of some mobile telephones that allows them to send messages including text, sound, images and video.

***Very high frequency (VHF)*:** a band of radio frequencies falling between 30 and 300 megahertz - (*frecvenţă foarte înaltă*)

***Transceiver*:** a transmitter and receiver combined in one unit.

***Interference*:** a jumbling of radio signals, caused by the reception of undesired ones - (*piedică, bruiaj*).

***Network*:** a group of transmitting stations linked by wire or microwave relay so that the same program can be broadcast or telecast by all - (*reţea*)

Remember the following expressions:

Fixed- line;
telephone network;
VHF band;
central control base station;
mobile units;
cellular network area;
telephone calls;
frequency channels;
main switching centre (MSC);
base stations.

II. Read the text: Cell Phone

A **mobile phone** or **cell(ular) phone** is an electronic telecommunications device with the same basic capability as a conventional fixed-line telephone, but which is also entirely portable and is not required to be connected with a wire to the telephone network. In addition to the standard voice function of a telephone, a mobile phone can support many additional services such as SMS for text messaging, packet switching for access to the Internet, and MMS for sending and receiving photos and video. Most current mobile phones connect to a cellular network of base stations (cell

sites), which is in turn interconnected to the public switched telephone network (PSTN) the exception are satellite phones).

Radiophones, using the VHF band, were developed during the Second World War to provide communications for ships and airplanes. At the end of the war they were further developed as mobile phones for use by the emergency services and other services such as taxis.

With mobile phone systems, all communications take place through a central control base station. Mobile units normally do not communicate directly with other mobile units. They send messages to the control base station and the base station controller relays the messages to other mobile units. Although mobile phones can be moved, they must stay within fixed areas. This type of system is limited by the fact that there are not enough VHF frequencies available for large numbers of communications between individual users.

The problem of a lack of suitable frequencies can be overcome by using a cellphone network. A cellular phone is a lightweight, portable radio transceiver which can transmit and receive telephone calls anywhere in the cellular network area. In the network, the same frequencies can be used for many different telephone calls at the same time. To achieve this, each communications area is devided into a number of hexagonal-shaped cells.

Each cell is allocated a number of frequency channels for communications. Although the frequencies used in any one cell are not used in its neighbouring cells, the same frequencies can be used in cells further away without causing interference. The size of the cells vary between 1 km to about 30 km across, depending on the output power of the cellphone transmitters. Each area can have a different number of cells, but a cluster of seven cells gives a good compromise between the number of frequency channels available in each cell and the interference between communications in different cells.

Each cell has a small electronic base station situated in a public place such as a car park or shopping centre. All the base stations for a clustor of cells are permanently connected to a main switching centre (MSC). This contains a computer to select suitable frequencies and control the communications for that cluster of cells. The MSC is also connected to other MSCs and to the public telephone exchange, allowing cellphones to make calls or receive calls from other cellphones and fixed telephones throughout the whole telephone system.

The MSC keeps a register of cellphones indicating their cell position. If the cellphone moves to another cell, its new position is signalled to the MSC. In this way, the MSC knows where to send signals to contact each cellphone. When a call is made to a cellphone, the MSC first checks the registrations to find the position of the cellphone. It then pages the cellphone and causes it to tune to the allocated frquency channel. The cellphone then begins sending an 8kHz signal to the base station. When the user takes the call, the 8kHz signal is discontinued and the speech channel is enabled.

The base station constantly monitors the signal level to a call. If the signal level becomes too strong it will cause interference to other users. To prevent this, the power level of the cellphone is automatically reduced. If the signal level becomes too weak, the MSC tests the signal strength from neighbouring base stations and switches the call to another base station and speech channel if necessary. This may cause a period of silence of up to about 400 ms while the switching take place.

III. Answer the following questions:

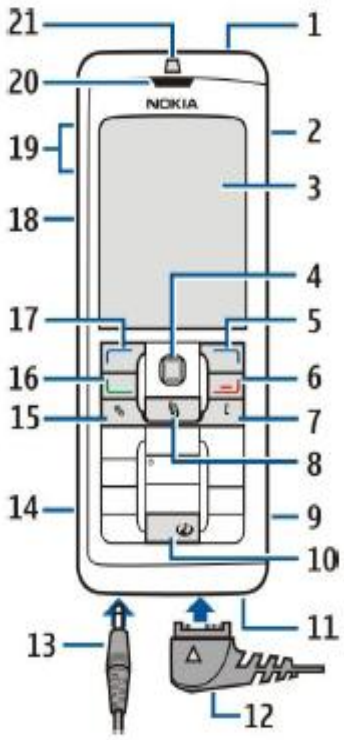
1. What is a mobile phone?
2. How do mobile units communicate to each other?
3. Where are the base stations usually situated?
4. What are the base stations of a cluster connected to?
5. What frequency has the signal sent by a cellphone to the base station?
6. How long does it take to switch between neighbouring base stations?
7. How many cells does a cluster usually have?
8. What shape do the cells have?

9. What frequencies do the radiophones use?
10. What is a packet switching used for?
11. What is the difference between a fixed line network and a mobile network?

IV. Activities

1. Study this diagram of a mobile phone:

1 - Power key
2 - Integrated loudspeaker
3 - Display
4 - Joystick. Press the joystick to enter a selection.
Use the joystick to scroll left, right, up, down, or to move around on the screen.
5 - Right selection key. Press either selection key to perform the function shown above it on the display.



6 - End key. Press the end key to reject a call, end active calls and held calls, close applications, and with a long key press, end data connections (GPRS, data call).
7 - Clear key
8 - Menu key. Press the Menu key to access the applications installed in your device. With a long key press, you can see a list of the active applications and switch between them. In this User Guide, "select Menu" refers to pressing this key.
9 - Memory card slot
10 - Internet key. Press and hold the key in the standby mode to browse the Web.
11 - Microphone. Do not cover the microphone with your hand during phone calls.
12 - Pop-Port™ . Connector for the USB data cable, headset, and loop set.
13 - Charger connector
14 - Infrared port
15 - Edit key
16 - Call key
17 - Left selection key. Press either selection key to perform the function shown above it on the display.
18 - Voice key/Push to talk (PTT) key
19 - Volume keys
20 - Earpiece
21 - Light sensor

2. Which buttons would you press for these operations? Justify your answers. Complete the list of your orders working in pairs:

1. switching **on** or **off**
2. using one of the programming functions
3. deleting mistakes or individual numbers
4. finishing your call
5. starting your call after keying in the number
6. writing a message /sending it

3. Fill in the missing words:

1. Mobile ---------- normally do not ---------- directly with other mobile units.
2. The size of the cells vary between 1km to about 3 km across, depending on the ---------- power of the cell phone ----------.
3. Mobile phone ---------- are limited because there are not enough VHF----------.
4. To achieve many different ---------- at the same time each ----------area is devided into a number of ----------cells.
5. All the base ---------- for cluster of ---------- are permanently connected to a----------(MSC).
6. The ---------- station constantly monitors the ----------level of a call.
7. This contains a ---------- to select suitable ---------- and control the communications for that cluster of ----------.
8. They send ---------- to the control base ---------- and the base station controller relays the messages to other mobile----------.

4. Find the wrong statements and correct them:

1. The problem of a lack of suitable frquencies can't be overcome by using a cellphone network.
2. Radiophones, using the VHF band, were developed to provide communications for ships and aeroplanes.
3. The cell phone begins sending an 800 khz signal to the base station.
4. Although mobile phones can be moved, they must stay within fixed areas.
5. The mobile communications are also used by the emergency services and taxi services.
6. In the network, the same frequencies can be used for many different telephone calls at the same time.
7. All the base stations for a cluster of cells aren't connected to a main switching center.
8. A mobile phone is a device for receiving and transmiting sounds over a distance.

5. Glance through the text on the following page to identify which pargraph deals with the following:

a) cellphone network
b) how signal levels are controlled
c) how MSC locates a cellphone
d) limitations of mobile phone systems
e) frequency distribution within cells and clusters
f) the development of mobile phones
g) how cellphones link with other cellphones and with the telephone system.

Language study:

Conditional sentences

I. **Present Indefinite ---------- Future Indefinite**

If I have time ***I shall carry out my experiment.***

II. **Past Indefinite----------should, would (could, might) + Indefinite Infin.**

f I had time ***I should carry out my experiment.***

III. **Past Perfect----------should, would (might, could)+ Perfect Infinitive**

If I had time last week ***I should have carried out my experiment.***

6. Complete the following sentences:

1. He will be happy if ----------.
2. If I had taken a taxi, ----------.
3. He will agree to join us if --------.
4. If I had not lost my dictionary, ----------.
5. He could go to the country if ----------.
6. If the weather were fine tomorrow, ----------.
7. If I had finished the work on time, ----------.
8. I shall help her if ----------.
9. I should visit them now if ----------.
10. He could have passed the exam if ----------.
11. If I meet him today ----------.
12. If I were you I ----------.

6. Study these statements about making a cellphone call. Link them into longer sentences. You may omit words and make whatever changes you think are necessary in the word order and punctutiation of the sentences:

1. A call is made of a cellphone.
2. The cellphone scans the available frequencies
3. The cellphone finds the strongest signal to the nearest base station.
4. The cellphone detects that the base station is idle.
5. The cellphone transmits the required dialling code.
6. If the code is received, ...
7. .... the base station sends a signal back to the cellphone.
8. The signal indicates a suitable frequency channel for the call.
9. The cellphone tunes to the allocated channel.
10. The telephone user hears the ringing tone.
11. The call is answered.
12. The user can speak and listen using the cellphone, as with the normal telephone.
13. The call is finished.
14. If the code is not received, ...
15. .....the cellphone abandons the call.
16. .....the cellphone tries again later.

V. Round up and Writing Practice

1. Translate into English:

1. Telefoanele mobile au devenit o necesitate în zilele noastre.
2. Radiotelefoanele folosesc benzile de frecvenţă înaltă.
3. Comutarea de pachete este o metodă eficientă de transmitere a datelor.
4. Telefonia fixă devine o tehnologie a trecutului.
5. Un telefon mobil reprezintă o unitate mobilă care poate primi şi transmite semnale.
6. Semnalele pot fi transmise oriunde în zona ariei de acoperire a reţelei.
7. Pentru a uşura lucrul reţelelor de telefonie mobilă, întreaga arie de acoperire este divizată în celule hexagonale.
8. La baza fiecărei celule se află o staţie.

9. Zgomotul care apare uneori este cauzat de interferenţa (suprapunerea) semnalelor.
10. Telefonia mobilă devine şi mai simplă prin implementarea serviciilor SMS şi MMS.
11. Unităţile mobile de obicei fac legătura între ele prin intermediul staţiilor de bază.

2. Retell the text:

VI. Memorize and comment the following quotations:

- Time is money. The less time you waste, the more money you make.
- Where there's a will, there is a way.

VII. Read, translate and find the title for this text. Retell it:

Mobile telephones have transformed the telecommunications industry. These devices can be used to make tephone calls from almost anywhere. There are two types – the normal mobile phone has the antenna mounted on the handset and the other has the antenna mounted on a separate transmitter or, if the phone is installed in a vehicle, mounted on the roof or rear window. Communications between a mobile phone and the nearest base station is achieved by the microwave emissions from the antenna. Only the normal mobile phone is considered here.

Concerns have been rased about the normal mobile phone, which has the antenna in the handset. In this case, the antenna is very close to the user's head during normal use of the telephone and there is concern about the level of microwave emissions to which the brain is being exposed.

Those telephones that have the antenna mounted elsewhere are of no concern, since exposure levels decrease rapidly with increasing distance from the antenna. Cordless telephones, which need to be operated within about 20 metres of a base unit that is connected directly to the telephone system, do not have any health concerns associated with their use because exposure levels are very low.

Reports have appeared in the media linking the use of mobile telephones with, among other things, headaches, hot spots in the brain and brain cancer.

Media reports have claimed that up to 70 percent of the microwave emissions from hand-held mobile telephones may be absorbed in the user's head. This is not supported by the evidence, but nevertheless leads to speculation that hot spots may be created in the user's brain, thereby raising concerns that the telephones may be a health risk. Other reports have indicated that mobile telephone users suffer localized headaches when they use their telephone.

There is no evidence that microwave exposure from mobile telephones causes cancer, and inclonclusive evidence that such exposure accelerates the growth of an already- existing cancer.

Users concerned about the possibility of health effects can minimize their exposure to the microwave emissions by: limiting the duration of telephone calls, using a mobile telephone which does not have the antenna in the handset or using a ,,hands-free'' attachment.

Unit 8: Computer science

I. Vocabulary:

Computer: an electronic device that stores and manipulates information, as like numbers, texts, symbols, graphics and sound
Computation: calculation
Hardware: the mechanical, magnetic, electronic, and electrical devices that form a computer system, as the CPU, disk drives, keyboard, or screen
Software: the programs used to direct the operation of a computer
Array: a block of related data elements, used for storing information
File: a collection of related data or program records stored as a unit with a single name
Processor: an electronic device designed to accept data, perform prescribed mathematical and logical operations at high speed, and display the results of these operations
Chip: a tiny piece of semiconductor material, usually a few square millimeters, on which a transistor or an entire integrated circuit is formed.

Words and expressions to be remembered:

computer screen,
desktop,
keyboard,
taskbar,
toolbar,
password,
hardware,
simple instruction,
computer industry,
computer memory,
internet,
web side,
e-mail,
computer virus,

software,	*network,*
laptop,	*anti-virus,*
joystick,	*megabite,*
new program,	*data storage.*

Verbs:

Access, change, compute, copy, delete, drive, exit, find, fix, fold, install, jump, keep, message, move, play, prevent, print, remove, run, save, select, set, view.

II. Read the text Computer Science

Computer science is the study of computers, including their design or architecture and their uses for computations, data processing, and systems control. The field of computer science deals with engineering activities such as the design of computers and of the hardware and software that make up computer systems. It also comprises theoretical, mathematical activities, such as the design and analysis of algorithms, performance studies of systems and their components. Computer systems are often too large and complicated to allow a designer to predict failure or success without testing. This is why experimentation is incorporated into the development cycle, being known as Benchmark. Computer science and computer engineering should be seen as two different disciplines overlapping in the area of computer architecture. The following subdisciplines of computer science can be identified:

(1) architecture, which includes all levels of hardware design, as well as the integration of hardware and software components to form computer system;

(2) software, which refers to the programs, or sets of instructions, that tell a computer how to carry out tasks; the different software categories are: software engineering, programming languages, operating systems, information systems and databases, artificial intelligence, computer graphics;

(3) theory, which covers computational methods and numerical analysis, and data structures and algorithms.

Data storage may be thought of as the major area of study in computer science for efficient search and retrieval. Data items of various types are stored in arrays, and efficient methods must be sought to handle the array data. Search techniques must address, for example, how a particular data item is to be found. Data sorting can be improved by algorithm development. Such algorithms may also apply to the files that constitute information systems and databases.

Computer scientists may also investigate various aspects of processor and multiprocessor architectures. A very large number (hundreds or even thousands) of processors can be linked together. In order to find the geometry that best supports computations, possible geometric configurations are examined. Computer scientists also develop methods to carry out computations on such multiprocessor machines.

The design of computer chips, or integrated circuits is an important area related to computer architecture. Computer scientists not only are of help in creating the computer-aided design (CAD) tools to assist engineers in the stage of chip design but also provide the necessary theoretical results.

Computer science has indirect relationships with virtually all disciplines that use computers. Applications developed in other fields often involve collaboration with computer scientists. In return, computer scientists have the opportunity to observe novel applications of computers, from which they gain a deeper insight into their use. These relationships make computer science a highly interdisciplinary field of study.

III. Answer the following questions:

1. What is “computer science”?
2. Why is testing so important in the field of computer science?

3. What is the difference between computer science and computer engineering?
4. What are the subdisciplines of the computer study and what do they include?
5. Can you name some fields of research in which computer scientists are involved in?
6. What is an array?
7. What does CAD stand for?
8. Why is computer science a highly interdisciplinary field of study?

IV. Activities

1. Make a survey of your group to find out the importance of the computer in our life. Use questions like these:

1. Do you have access to a computer?
2. Where? At home? At work? At the university?
3. What do you use it for?
4. What kind of computer is it?
5. What is a computer?
6. Which are the computer tasks in general?
7. What are the computer tasks at home?
8. Why are computers so widely used?
9. What is turned on or off in homes by a computer?
10. What are computers used for business?
11. What is the use of computers in education?

2. Look at this figure and speak about the main parts of a computer. What do you know about them?

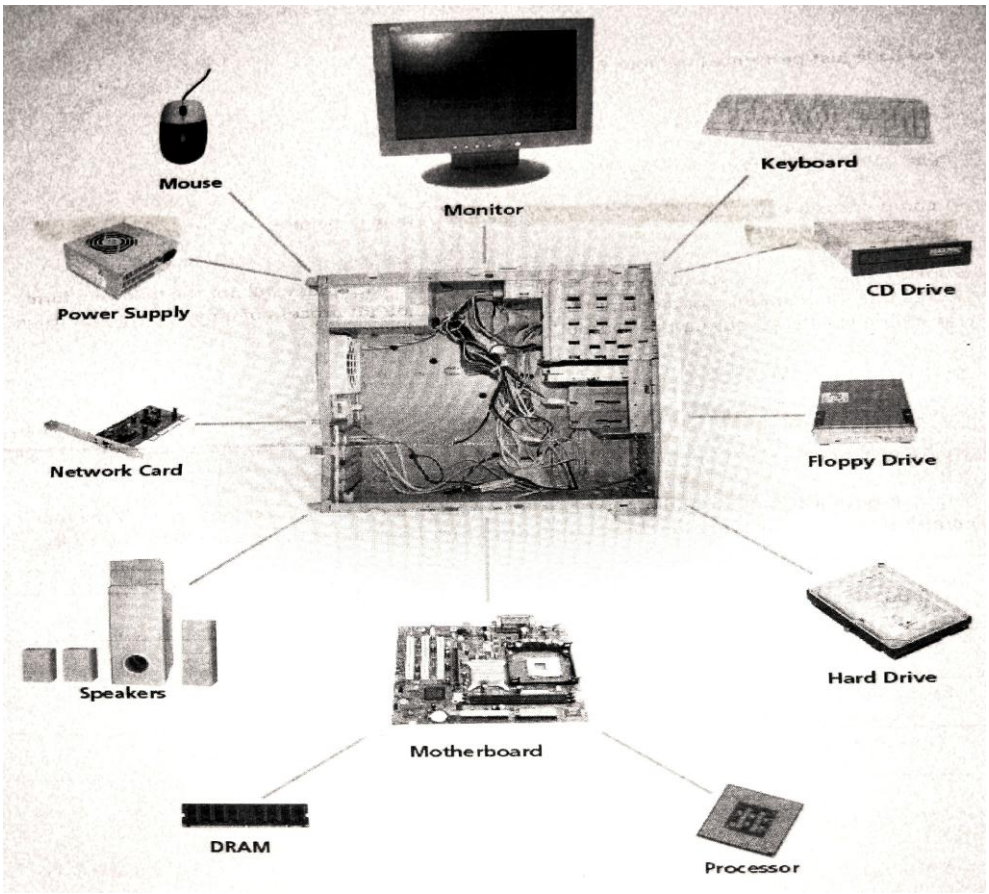


Fig.1

3. Match the elements from column A with those from column B:

A	B
1. Web site	1. protecţie antivirus
2. taskbar icon	2. viteză de ceas
3. access control	3. resurse de ajutor
4. help resourse	4. efect sonor
5. Animation file	5. informatică
6. Sound effect	6. facilitate de calcul
7. Network adapter	7. sit Web
8. Resource use	8. canal de control
9. Anti-virus protection	9. folosirea resurselor
10. Computer memory	10. serviciu de mesagerie
11. Status bar	11. fişier de animaţie
12. Computer screen	12. rezoluţie a ecranului
13. Word processor	13. mărimea fişierului
14. Computer science	14. industria calculatoarelor
15. Clock speed	15. ecranul calculatorului
16. Computer industry	16. parametru al parolei
17. File size	17. preambul al pachetului
18. Calculation facility	18. bară de stare
19. List item	19. icon al barei de sarcini
20. Messenger service	20. previzualizare a paginii
21. Packet header	21. adaptor de reţea
22. Password parameter	22. controlul accesului
23. Print preview	23. memoria calculatorului
24. Control channel	24. element al listei
25. Screen resolution	25. editor de text

4. True or false? Find the false statements and correct them:

1. Computer science mainly deals with the selling of computers.
2. Theoretical activities are not a part of computer science.
3. Testing plays a big role in building a computer system.
4. Data is stored in special blocks, called arrays.
5. Software comprises the electronic components of the computer.
6. Designing processors is what computer scientists also do.
7. Algorithms can't make the sorting of information easier.

Language study:			
	The Infinitive		
Indefinite	**Continuous**	**Perfect**	**Perfect Contin.**
	active		
to write	***to be writing***	***to have written***	***to have been writing***
	passive		
to be written	----------	***to have been written***	----------

5. Translate the following sentences paying attention to the infinitive:

1. This is the device **to be used** in our experiment.
2. The thermometer is a device **to measure** the temperature.

3. Where are the articles **to be translated** by the students?
4. The letter **to be answered** was given to me.
5. The generator is a device **to change** mechanical energy into electric energy.
6. Telephone is known **to be** a very useful electronic device.
7. We expected many articles **to have already been written** on that subject.
8. This scientist seems **to have been working** on the problem of splitting the atom.

6. Make up sentences of your own using the infinitive and the active words from the text:

7. Insert the missing words:

1. Experimentation is incorporated into the development cycle, being known as _____.
2. The design of _____ _____, or integrated circuits is an important area related to computer architecture.
3. Data sorting can be improved by _____ development.
4. A very large number (hundreds or even thousands) of _____ can be linked together.
5. Architecture, which includes all levels of _____ design.
6. Computer science has _____ relationships with all disciplines that use computers.

V. Round up and Writing Practice

1. Translate the following sentences:

1. Sistemele computerizate sunt extrem de sofisticate, deaceea proiectarea lor este imposibilă fără testare.
2. Ştiinţa computerilor se ocupă de problemele teoretice ale construcţiei computerilor
3. În activitatea sa, inginerii sunt deseori ajutaţi de programe speciale pentru design la computer.
4. Problema optimizării păstrării şi sortării datelor este una din cele mai importante părţi a ştiinţei computerilor.
5. Procesorul este elementul electronic al computerilor destinat transmiterii şi prelucrării datelor la viteză înaltă.
6. Procesoarele pot fi unite între ele, pentru a forma un complex ce măreşte capacitatea de transmitere a informaţiei.
7. Algoritmii constituie elementul de bază al programării la computer.
8. Microchipul este de dimensiuni foarte mici, însă joacă un rol deosebit de mare în activitatea sistemului computerizat.

2. Retell the text A.

VI. Memorize and comment the following quotations:

- All is well that ends well.
- To know everything is to know nothing.

VII. Read, translate and retell the text:

THE INTERNET

The internet has made it possible for people all over the world to communicate with one another in an effective and rapid way. The Internet is composed of a large number of interconnected

networks. It may connect thousands of computers that can share information and various resources. The Internet has had a remarkable influence on higher education and business: children use them at school, universities offer online courses and companies provide goods and services over a vast area, displaying them on the Internet.

During the last decade, the Internet has grown impressively in the number of people using it and the amount of information provided. The introduction of the World Wide Web (WWW) in 1989 dramatically changed communication possibilities across long distances. The WWW is a set of programs, standards, and protocols governing the way in which multimedia files are created and displayed on the Internet.

The Internet contains WWW and also includes all the hardware (computers, supercomputers and connections) and non-WWW software and protocols on which the WWW runs.

Businesses use the Internet to provide access to complex databases. Companies carry out online commerce: advertising, selling, buying, distributing products, and providing after-sales services. Scientists and scholars can communicate with colleagues, perform research, distribute lecture notes and course materials to students, and publish papers and articles on the Internet.

In order to access information on the Internet, a user must first log on, or connect, to the client computer's host network. A host network is usually a local area network (LAN). Once the connection has been established, the user requests information from a remote server. The information is retrieved and sent to the user's terminal.

Once the client computer makes a connection with the server containing the requested information, the information is sent to the client by the server in the form of a file. *Downloading* is the name of the process of retrieving files from a remote server to the user's terminal. *Hypertext* is the interlinked system of documents in which a user may go from one document to another on account of the links provided. Such links, called *hyperlinks* allow the user to jump from one document to another. By clicking on the hyperlink, the user is immediately connected to the document specified by the link.

Companies doing business over the Internet must have very sophisticated security measures in place so that information such as credit card, bank account, and social security numbers cannot be accessed by unauthorized users.

It seems likely that the Internet will be the choice for the linking of diverse systems in the academic, government and business sectors for the remainder of this decade and will into the next.

Supplement 1

Resumé (American style)

Jennifer Roberts
1320 Forest Drive
Palo Alto, CA94
Tel:(650)498-129
e-mail: jlroberts@mailbox.com

Married
No children

Objective

To obtain a position as an English-German translator with a firm in the Bay Area.

Education

1996-1998 Master of Arts in Translation, Standford University
1990-1994 Bachelor of Arts
Major: German; Minor: Russian, Georgetown University

Experience

1998-present Freelance technical translator, German-English,
Mostly for hi-tech industries in California
1996-1998 Teaching Assistant (German), Standford University
1994-1996 English Teacher, Cambridge Institute, Heidelberg, Germany

Languages

Fluent German, English and Russian

Personal

Interests include sailing, cooking and entertaining friends.

Reference

Dr.M.Rosen, Chair, Department of Modern Languages,
Standford University, Palo Alto, CA94305

Supplement 2

Curriculum Vitae (British style)

Name	Peter James Green
Address	26 Windmill Road, Bristol BS2 6DP
Tephone	0117945649
Nationality	British
Date of birth	11 March 1977
Marital status	Single

Education / Qualifications

1996-1999	Anglia Polytechnic University: BA in Graphic Design
1998-1995	Clifton School, 3 A levels: Art(A); Design and Technology(A); Mathematics (C) 10 GCSEs

Employment to date

1999- present	EMS Corporate Imaging, Design Department, Riverside House, 22 Charles St, Bristol
Skills	Computer literate: familiar with a number of design and DTP Packages; Clean driving licence
Interests	Tennis, swimming, jazz.

Supplement 3

Fax from:

Falcon Publishing
452 Walnut Street
Philadelphia, PA 19106

Fax : 215 925 8722

Fax to: Charles H.Reed, Badger Books

Fax no: 202 736 5412

Date: May 22, 2008

Subject: Publicity material

No. Of pages including this one: 1

From: Amy Cavadino, Publicity Assistant Children's Books, cavada@falcpub.com

---

Following our phone conversation last Friday, I am sorry to say that the publicity material for The Magic Pineapple will not be available until next week. I will arrange for it to be sent to you as soon as we receive it from the printers.

Amy Cavadino

Supplement 4

Letter writing

Informal letters

2 South Street
Liverpool L17 6HS

11 August

Dear Liz

Just a quick note to thank you for the wonderful day we spent with you on Sunday. The kids really enjoyed themselves and it was a rare treat for me to sit back, glass in hand, while you and John did all the hard work of entertaining them.

Anyway, the two of you must come and have dinner with me sometime soon. I'll put the kids to bed and we'll have a really civilized evening. I'll give you a call during the week and we can arrange something.

Love,
Rachel.

* *to family members and close friends*:	**Love;** **Love from;** **Lots of love**
* *to friends and aquaintances:*	**Best wishes** **All the best** **Take care**

Formal letters

(applying for a job)

26 Windmill Road
Bristol BS2 6DP
24 May 2009

Ms Emma Campbell
Personel Manager
Multimedia Design
4 Kennington Road
London SE1 8DD

Dear Ms Campbell

I am writing to apply for the position of assistant designer advertised in the Evening Post of 23 May. Please find enclosed a copy of my CV.

I have a degree in Graphic Design from Anglia Polytechnic University.Since graduation last summer I have been working for EMS Corporate Imaging on a contract basis. I have become particularly interested in interactive and multimedia work and now wish to develop my career in that direction. I would welcome the chance to work as part of a small, dynamic team where I would make a significant contribution while developing my skills yet further. I would be happy to show you a portofolio of my work.

I look forward to hearing from you.

Your sincerely

Peter Green

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Summary

English for Telecommunications and Radioelectronics

Autor: *Mariana Ababii*

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