НАВЧАЛЬНИЙ ПОСІБНИК
Professional English. Automated Control Systems
(Акмалдінова О.М., Кравчук О.Ю., Максимович Г.О., Шульга Т.В.)

UNIT I. ELECTRIC CURRENT AND MEASUREMENT.
TYPES OF ELECTRIC CIRCUITS

Exercise 24. *Read, practice and learn the following words and word combinations.*
Circuit – схема, коло (в електриці)
switch – перемикач
break – пошкоджувати
series – послідовна (схема), з послідовним підключенням
parallel – паралельна (схема), з паралельним підключенням
coil – котушка (індуктивності); намотувати, обмотувати

 Exercise 25. *Read, translate and give the gist of text 3.*

Text 3. Types of electric circuits

Electrons with a negative charge, can't 'jump' through the air to a positively charged atom. They have to wait until there is a link or bridge between the negative area and the positive area. We usually call this bridge a 'circuit'. When a bridge is created, the electrons begin moving quickly. Depending on the resistance of the material making up the bridge, they try to get across as fast as they can. If you are not careful, too many electrons can go across at one time and destroy the 'bridge' or the circuit, in the process. We learned about electrons and the attraction between positive and negative charges. We also learned that we can create a bridge called a 'circuit' between the charges. We can limit the number of electrons crossing over the circuit. So, we can make electricity do something for us while they pass their way. For example, we can 'make' the electrons 'heat' a filament in a bulb, causing glow and give off light. When we limit the number of electrons that can cross over our circuit, we say we are giving it 'resistance'. We 'resist' letting all the electrons through. Copper wire is just one type of bridge we use in circuits.Before electrons can move far, however, they can collide with one of the atoms along the way. This slows them down or even reverses their direction. As a result, they lose energy to the atoms. This energy appears as heat, and the scattering is a resistance to the current. Current refers to the movement of charges. In an electrical circuit electrons move from the negative pole to the positive. If you connect the positive pole of an electrical source to the negative pole, you create a circuit. These charges change into electrical energy when they are connected in a circuit – similar to connecting the two poles on opposite ends of a bulb.

Exercise 26. *Answer the questions on text 3.*
1. What is called a 'circuit'? 2. What does the movement of electrons depend on? 3. How does resistance influence electrons? 4. How is a circuit created? 5. When does a charge change into electrical energy? 6. When is circuit 'closed' or 'open'? 7. What is called 'current'? 8. What unit is used to measure the number of electrons moving across the circuit every second? 9. How can we measure the amount of charge between the sides of the circuit? 10. Why are voltage, current and resistance very important to circuits? 11. What circuit is called a 'series circuit'? 12. How are parallel circuits arranged? 13. How does the electric current flow in a parallel circuit? 14. What prevents parallel circuit from being broken?

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UNIT II. COMPUTERS. TYPES OF COMPUTERS. COMPUTER NETWORKS

Exercise 1. *Read, practice and learn the following words and word combinations*.
Programmable – програмований
calculate – обчислювати
process – обробляти
retrieve – вилучати, одержувати
data (sing.– datum) – дані
instruction – команда
enable – давати можливість (змогу)
software – програмне забезпечення, програмні засоби
hardware – апаратні засоби
digital computer – цифровий комп'ютер
analog computer – аналоговий комп'ютер

Exercise 2. *Read, translate and give the gist of text 1.*

Text 1. Computer Hardware

A computer is a programmable machine designed to carry out a sequence of arithmetic or logic operations automatically. The distinguishing feature of a computer as compared with a calculating machine, such as an electronic calculator, is its ability to process, store, and retrieve data without human intervention. This ability makes it possible for a computer to perform many operations without the need for a person to enter new instructions each time. Modern computers are made of high-speed electronic components that enable the computer to perform thousands of operations each second. The definition of the operations is called the program. Computers perform tasks or calculations according to a set of instructions or programs. The various programs by which a computer controls its operations, such as those for translating data from one form to another, are known as software. There are two basic types of computers analog and digital. An analog computer performs computations by manipulating continuous physical variables, such as voltage and time. A digital computer operates on discrete quantities, most represented as 'on-off', indicating whether the value of a binary variable is 0 or 1. Numbers and information are then represented by the binary system. Most digital computers are general purpose computers. A general purpose computer has four main components: the arithmetic logic unit (ALU), the control unit, the memory, and the input and output devices (I/O). The control unit, A LU, registers, and basic I/O (and often other hardware closely linked with these) are collectively known as CPU.

Exercise 16. *Answer the questions on text 1.*
1. What is a computer? 2. What is a distinguishing feature of a computer as compared to a calculating machine? 3. What does the operation of a computer depend on? 4. What is software? 5. What is the purpose of computer hardware? 6. How do analog and digital computers operate? 7. What are the main components of a general purpose computer? 8. What components are collectively known as a central processing unit (CPU)? 9. What is a microprocessor? 10. What are registers? How are they used in a computer?