

**Зразок навчального посібника з підготовки  
до практичних занять**

**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?

**Зразок практикуму з підготовки  
до практичних занять**

**ПРАКТИКУМ**

**Professional English. Energy Saving**

(О. М. Акмалдінова, Г.О. Максимович, Т. В. Шульга)

**UNIT III. ENERGY SAVING AND CONSERVATION**

**Exercise 1.** *Memorize the basic vocabulary to text 1.*

National security – національна безпека

direct consumer – прямий споживач

energy costs – витрати на енергію

profit – прибуток

greenhouse gas emission – викид парникових газів

International Energy Agency – Міжнародне енергетичне агентство

energy policy – енергетична політика

energy shortage – дефіцит енергії

energy efficiency – енергоефективність

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

**Text 1. Energy Conservation and Efficiency**

Energy conservation is a process used to reduce the amount of energy that is used for different purposes. This practice may result in increase of financial capital, environmental value, national and personal security, and human comfort. Individuals and organizations that are direct consumers of energy may want to conserve energy in order to reduce energy costs and promote economic, political and environmental sustainability. Industrial and commercial users may want to increase efficiency and thus maximize profit. On a larger scale, energy conservation is an important element of energy policy. In general, energy conservation reduces the energy consumption and energy demand per capita. This reduces the rise in energy costs, and can reduce the need for new power plants, and energy imports. The reduced energy demand can provide more flexibility in choosing the most preferred methods of energy production. By reducing emissions, energy conservation is an important method to prevent climate change. Energy conservation makes it easier to replace non-renewable resources with renewable energy and is often the most economical solution to energy shortages. Efficient energy use, sometimes simply called energy efficiency, is the goal to reduce the amount of energy required to provide products and services. For example, insulating a home allows a building to use less heating and cooling energy to achieve and maintain a comfortable temperature.

**Exercise 8.** *Answer the questions on text 1.*

1. What is energy conservation and what purposes is it used for? 2. Why may direct energy consumers be interested in conserving energy? 3. Why is energy conservation an important element of energy policy? 4. What can the reduced energy demand provide for industrial and commercial users? 5. How important is energy conservation in terms of preventing climate changes? 6. What is another term for efficient energy use? 7. What is energy efficiency aimed at? 8. How can individual energy consumers make their buildings more energy efficient? 9. What are improvements in energy efficiency generally achieved by? 10. How is reducing energy related to the problem of reducing greenhouse gas emissions? 11. Why are government-led energy subsidies considered to be undesirable when it comes to energy saving? 12. What is said to be the twin pillars of sustainable energy policy? 13. Why is energy efficiency seen to have a national security benefit in many countries?