**I. Read the text**

**ELECTRICAL MEASURING INSTRUMENTS AND UNITS**

Any instrument which measures electrical values is called a meter. An ammeter measures the current in amperes. The abbreviation for the ampere is amp. A voltmeter measures the voltage and the potential difference in volts.

The current in a conductor is determined by two things – the voltage across the conductor and the resistance of the conductor. The unit by which resistance is measured is called the ohm. The resistance in practice is measured with the ohm-meter. A wattmeter measures electrical power in watts. Very delicate ammeters are often used for measuring very small currents. A meter whose scale is calibrated to read a thousandth of an ampere is called a micro ammeter or galvanometer.

Whenever an ammeter or voltmeter is connected to a circuit to measure electric current or potential difference, the ammeter must be connected in series and the voltmeter in parallel. To prevent a change in the electric current when making such an insertion, all ammeters must have a low resistance. Hence, most ammeters have a low resistance wire, called a shunt, connected across the armature coil.

A voltmeter, on the other hand, is connected across that part of the circuit for which a measurement of the potential difference is required. In order that the connection of the voltmeter to the circuit does not change tire electric current in the circuit, the voltmeter must have high resistance. If the armature coil does not have large resistance of its own, additional resistance is added in series.

The heating effect, electrostatic effect, magnetic and electromagnetic effects of electric current are used in order to produce the defleting torque. The resulting measuring instruments are called: (a) hot wire, (b) electrostatic, (c) moving iron, (d) moving coil, and (e) induction. Various types are used with both d. c. and a. c., but the permanent-magnet moving coil instrument are used only with d. c., and the induction type instruments are limited to a. c.

All, except the electrostatic type instruments, are current measuring devices, fundamentally ammeters. Consequently, most voltmeters are ammeters designed also to measure small values of current directly proportional to voltage to be measured.

**II. Guess the meaning of international words:**

1) instrument; 2) fact; 3) abbreviation; 4) voltmeter; 5) ohm; 6) ohmmeter; 7) wattmeter; 8) galvanometer; 9) shunt.

**III. Give the Russian equivalents to the words below:**

1) resistance; 2) to offer; 3) scale; 4) to prevent; 5) armature; 6) connection; 7) heating effect.

**IV. Give the English equivalents to the words and word-combinations:**

1) амперметр; 2) разница потенциалов; 3) определят; 4) чувствительный; 5) градуировать; 6) вставка; 7) катушка; 8) переменный ток (второй термин).

**V. Answer the questions:**

1. How are electrical values measuring instruments called?

2. How must the ammeter and the voltmeter be connected?

3. What resistance must the ammeter and the voltmeter have?

4. What resulting measuring instruments do you know?

5. What types of instruments are used with both d. c. and a. c.?

6. What instruments are used only with d. c. and limited to a. c.?

**VI. Make up sentences corresponding to the contents of the text:**

1. A meter the potential difference in volts

2. An ammeter the resistance

3. An ohmmeter measures very small currents

4. A voltmeter electrical values

5. A galvanometer the current

1. The voltage in ohms

2. The current is measured in volts

3. The resistance in amperes