**Тема:** «Измерительные приборы. Продолжение»

**Цель:** Повторить лексику по теме «Измерительные приборы, электрооборудование»

**Задачи:** Отработать навык работы (в т.ч. перевода) с профессиональной лексикой по теме «электричество», повторить тематический материал, актуализировать имеющиеся знания.

**Специальность:** 13.02.09 Монтаж эксплуатации линий электропередачи, 13.02.11 Техническая эксплуатация и обслуживание электрического и электромеханического оборудования (по отраслям)

1. **Learn the glossary**
2. **Translate the sentences**
3. **Answer the questions**
4. **Give summary**

**An ordinary voltmeter can be used as an intermittent ground detector**

*Оn dc circuits of any voltage, as shown in* ***Fig. 1.101****. The voltmeter ordinarily used to indicate the voltage on the system can, of course, be used for this purpose, the voltmeter switch shown in the cut being arranged to give the different desired connections.* If, for example, the system shown in **Fig. 1.101** were of about 100 V, the voltmeter would register 100 when the levers of the switch were on the inside contact points as shown. If, now, the right-hand lever were moved to the outside contact point as shown dotted and there were a ground on the system, as at *a*, current would pass from the positive busbar through the circuit to *a*, thence through the ground to the ground wire, and through the voltmeter to the negative busbar, causing the voltmeter to read something below 100 unless the ground at *a* were practically a perfect connection. In that case the voltmeter reading would be 100. If the positive side of the system were entirely free from grounds, the voltmeter reading would be 0.

*Let us assume that under these conditions the voltmeter reads 50 and that the resistance of the voltmeter itself is 20,000 Ohms. Since with no external resistance, when the voltmeter is connected directly to the busbars, it reads 100, while now it reads 50, the total resistance under the new conditions must be 40,000 Ohms.*  **Fig. 1.101**

The resistance of the ground at *a* is 40,000 - 20,000 Ohms = 20,000 Ohms. If the voltmeter had read only 20, the total resistance would have been 100/20 x 20,000 - 100,000, and the resistance of the ground 100,000 -20,000 = 80,000 Ohms.

1. **Translate the lines given in italics.**
2. **Explain (in short) how voltmeter can be used as an intermittent ground detector**
3. **Decide if the statement is true or false.**
4. Voltmeters have a high resistance and are designed to be connected directly across the power line
5. Ammeters have a high resistance and must be connected in series with a load to limit the flow of current.

3. AC ammeters use a current transformer to change the range setting.

4. Clamp-on ammeters measure the voltage by measuring the strength of the magnetic field around a conductor.

5. Ohmmeters are used to measure the current in a circuit.

6. Ohmmeters contain an internal power source, generally batteries.

7. Ohmmeters must be connected to a circuit that has power applied to it.

8. Digital multimeters display their value in digits instead of using a meter movement.

9. Digital multimeters generally have an input impedance of 20 MOHMs on all ranges.

10. The stationary coil of a wattmeter is connected in series with the load and the moving coil is connected to the line voltage.

11. The turning force of the wattmeter is independent of the strength of the magnetic field of the stationary coil and the strength of the magnetic field of the moving coil.

12. Digital ohmmeters measure resistance by measuring the voltage drop across an unknown resistor when a known amount of current flows through it.

13. Low-impedance voltage testers are susceptible to indicating a voltage caused by a high-impedance ground or a feedback.

16. A bridge circuit can not be used to accurately measure values of resistance, inductance, and capacitance.

17. The oscilloscope measures the amplitude of voltage with respect to time.

18. The frequency of a waveform can be determined by dividing 1 by the time of one cycle (F =1/T).

19. Voltmeters are used to test insulation resistance.

20. Megohmmeters can be hand crank or battery powered.

1. **Answer the questions:**

1. A DC voltmeter has a resistance of 20,000 Ohms per volt. What is the resistance of the meter if the range selection switch is set on the 250-V range?

2. What is the purpose of an ammeter shunt?

3. Name two methods used to make a DC multirange ammeter.

4. How is an ammeter connected into a circuit?

5. How is a voltmeter connected into a circuit?

6. What type of meter contains its own, separate power source?

**4**

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1. **Match pictures to the descriptions:**
2. DC-AC clamp-on ammeter.
3. Low-impedance voltage tester. (Neon-glow lamp tester)
4. An oscilloscope.
5. Digital multimeter. **5**
6. Current transformer with a ratio of 600:5.

**2. Correct statements**

1. Voltmeters have a high resistance and are designed to be connected directly across the power line

2. Ammeters have a low resistance and must be connected in series with a load to limit the flow of current.

3. AC ammeters use a current transformer to change the range setting.

4. Clamp-on ammeters measure the flow of current by measuring the strength of the magnetic field around a conductor.

5. Ohmmeters are used to measure the resistance in a circuit.

6. Ohmmeters contain an internal power source, generally batteries.

7. Ohmmeters must never be connected to a circuit that has power applied to it.

8. Digital multimeters display their value in digits instead of using a meter movement.

9. Digital multimeters generally have an input impedance of 10 MOHMs on all ranges.

10. The stationary coil of a wattmeter is connected in series with the load and the moving coil is connected to the line voltage.

11. The turning force of the wattmeter is proportional to the strength of the magnetic field of the stationary coil and the strength of the magnetic field of the moving coil.

12. Digital ohmmeters measure resistance by measuring the voltage drop across an unknown resistor when a known amount of current flows through it.

13. Low-impedance voltage testers are not susceptible to indicating a voltage caused by a high-impedance ground or a feedback.

16. A bridge circuit can be used to accurately measure values of resistance, inductance, and capacitance.

17. The oscilloscope measures the amplitude of voltage with respect to time.

18. The frequency of a waveform can be determined by dividing 1 by the time of one cycle (F \_ 1/T).

19. Megohmmeters are used to test insulation resistance.

20. Megohmmeters can be hand crank or battery powered.