

AN ROINN OIDEACHAIS.
(DEPARTMENT OF EDUCATION)

AN BRAINSE GAIRM-OIDEACHAIS.
(TECHNICAL INSTRUCTION BRANCH.)

CERTIFICATE EXAMINATIONS

for

DAY VOCATIONAL COURSES, 1952.

MAGNETISM AND ELECTRICITY.

Thursday, June 19th—10 to 12 noon.

Instructions.

Not more than *five* questions to be attempted.

All the questions carry equal marks.

1. Describe how, using a compass needle, you would plot the magnetic field in the neighbourhood of a bar magnet. Sketch the field around a bar magnet placed with its S-pole pointed towards the earth's magnetic N-pole.

2. Describe and explain one method of magnetising a piece of steel. How may the magnetism be destroyed?

Explain the term "residual magnetism".

3. An electric fire is rated "2 Kilowatts at 200 volts." Explain what this means, and calculate the resistance of the heating elements at the rated voltage. What is the cost of using the fire for two hours, if energy costs 6d. per unit?

[P.T.O.]

4. Define (a) the ampere, (b) the watt, (c) the Joule.

If 20 volts are applied across a resistance of 10 ohms for 4 minutes, calculate

- (i) the current flowing,
- (ii) the quantity of electricity supplied,
- (iii) the energy supplied.

5. Explain why a metal filament lamp takes more current at the instant of switching on than when it is glowing.

The resistance of a coil of wire is 5 ohms at 10°C ., and is 7.2 ohms at 100°C . Calculate the temperature coefficient at 0°C . of the material in the coil of wire.

6. Three resistors of 12 ohms, 6 ohms and 4 ohms are arranged (a) in series, (b) in parallel. Calculate the equivalent resistance in each case. When the resistors are in parallel a current of 0.2 amp flows in the 12 ohm resistor, calculate the total current flowing in the arrangement.

7. Make a sketch of a flash lamp battery to show its construction, and explain its action; name the principal materials used and state the purpose of each.

8. Explain the terms (a) anode, (b) cathode, (c) electrolyte. Describe an experiment to determine the electro chemical equivalent of copper.