

CERTIFICATE EXAMINATIONS
FOR
DAY VOCATIONAL COURSES, 1966
MAGNETISM AND ELECTRICITY
MONDAY, 13th JUNE - 10 a.m. to 12 noon

INSTRUCTIONS

Not more than five questions to be attempted.
All the questions carry equal marks.
Illustrate your answers with sketches and diagrams where possible.

1. (a) Draw the magnetic field surrounding the magnets in Fig. 1.
(b) Show how a steel bar can be magnetised by two different methods. State which method you think is the better.
2. (a) Describe an experiment to investigate the magnetic field around a straight conductor through which current flows. State any rule which shows the direction of the magnetic field.
(b) Explain briefly how a moving Coil Ammeter works.
3. (a) State Lenz's Law.
(b) A coil rotating in a magnetic field is shown in Fig. 2. The table below is intended to show the relationship between the polarity of the magnet, the rotation of the coil and the direction of the induced current. Complete the table viewing the coil in the direction of arrow Y.
(c) Name the part Z and explain its effect on the current flowing in the resistance R.
4. (a) A glass jar contains distilled water and two electrodes, which are connected respectively to the positive and negative terminals, of a battery. A few grains of copper sulphate are then added to the water. State and explain what happens before and after the addition of the copper sulphate.
(b) A Copper Voltmeter deposits 2.64 grams of copper on its cathode in 40 minutes. An Ammeter in the circuit reads 3.5 amps. Calculate the error in the ammeter reading if the E.C.E. of copper is 0.00033 grams/coulomb.
5. Four cells each of E.M.F. 2V and Internal Resistance 0.1 ohms are connected in series to form a battery. The battery is connected to a 1.6 ohm resistance.
Find (1) the current flowing.
(2) the P.D. of the Battery.
If one of the cells is reversed in polarity what will then be the current flowing ?
6. (a) a bulb consumes 40W when connected to a 200V supply. If five such bulbs are connected in series across the same supply, find the current flowing.
(b) If the bulbs are connected in parallel, what current would flow ?
7. (a) What is meant by the Resistivity (Specific Resistance) of a conductor ?
(b) Describe carefully an experiment to measure the resistivity of a piece of wire.
(c) Find the resistance of a coil of wire 1,000 metres long and 0.1 sq.cms cross-sectional area of its resistivity is 1.6 micro ohm per centimetre cube.