

Final Term Examination 2017-2018

Std. : IX
Subject : Physics

Full Marks : 80
Time : 2hrs.

Section — A [40 Marks] (Compulsory)

- Q1. Write the SI unit for the following physical quantities.** [½x4=2]
- (a) (i) Resistivity (ii) torque
(iii) Electrical Energy (iv) Moment of force.
- (b) State and define the SI Unit of potential difference. [2]
- (c) State the condition when on applying a force, a body has — [2]
(i) the translational motion.
(ii) the rotational motion.
- (d) The moment of a force of 0.5 kgf above a point is 2Nm. Calculate the distance of point of application of the force. [2]
- (e) What is the position of centre of gravity of a — [2]
(i) rectangular lamina (ii) cylinder
- Q2.** (a) An electric bulb draws 1200mA current at 6.0v. Find the resistance of filament of bulb while glowing. [2]
(b) Write any two factors on which resistance of a given wire depends and state how is it affected by the factors stated by you. [2]
(c) Write any two properties of magnetic field lines. [3]
(d) Calculate the resistance of 1km long copper wire of radius 1mm. ($\rho = 1.72 \times 10^{-8}\Omega\text{m}$) [2]
(e) State Ohm's law. [2]
- Q3.** (a) State two evidences of the existence of earth's magnetic field ? [2]
(b) State two factors which affect the turning effect of a force. [2]
(c) Can centre of gravity of a body be situated outside its material ? Give one example. [2]
(d) You have three resistors of values 2Ω , 3Ω and 5Ω . How will you connect them so that the equivalent resistance be more than 2Ω and less than 4Ω . Show the diagram and calculate the equivalent resistance. [2]
(e) What is an artificial magnet ? State two reasons why do we need the artificial magnets. [2]

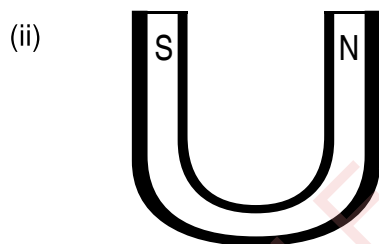
- (i) the p.d. across the 4 W resistor.
- (ii) the p.d. across the internal resistance of the cell
- (iii) the p.d. across the $R\Omega$ resistor and
- (iv) the value of R.

- Q7.** (a) Name the physical quantities which is measured in — [1]
- (i) kw (ii) kwh
- (b) A bulb of power 40w is used for 1.25h each day for 30 days. Calculate the electrical energy consumed. [2]
- (c) State how are the two resistors joined with a battery in each of the following cases — [3]
- (i) Same current flows in each resistor.
 - (ii) equivalent resistance is less than either of the two resistances.
 - (iii) equivalent resistance is more than either of the two resistances.
- (d) (i) How does specific resistance of a wire depends on the radius of wire. [1+3=4]
- (ii) A wire of resistance 9Ω having length 30 cm is tripled on itself. What is its new resistance?
- Q8.** (a) Define the SI unit of resistance. [1]
- (b) In a conductor 6.25×10^{16} electrons flow from its end A to end B in 2s. Find the current flowing through the conductor. ($e = 1.6 \times 10^{-19}C$) [2]
- (c) (i) Give reason —
The resistance of ammeter must be low. [3]
- (ii) Write the necessary condition for a conductor to obey Ohm's law.
- (d) (i) Name the device labelled n the diagram. [4]

(ii) Write any one function of A,B, D and E.

- Q9.** (a) An electric iron is rated '220V, 1KW'. Under normal working conditions, find the resistance of its heating element. [1]
- (b) Differentiate open circuit and closed circuit C two points. [2]
- (c) Name the material need for making the armature of an electric bell. Give reason for the your answer. [3]
- d) (i) State two ways through which the strength of an electromagnet can be increased. [2+2=4]
- (ii) Why is soft iron used as the core of the electromagnet in an electric bell.

- Q10.** (a) What is an electromagnet ? [1]
- (b) Draw a labelled diagram to make an electromagnet from a soft iron bar. Mark the polarity at its ends. [2]
- (c) Draw at least two magnetic field lines between the two poles of the magnets — [3]



- (d) (i) What is a natural magnet ? State two limitations of a natural magnet. [2]
- (ii) When two pins are hung by their heads from the same pole of a magnet, their pointed ends move apart. Why ? [2]