

**TEST SERIES(PHYSICS)**  
**MAGNETIC EFFECT AND MAGNETISM**

**MM 30**

**MT1H**

Q1.How will the magnetic field intensity at the centre of a circular loop carrying current change if the current through the loop is doubled and the radius of coil is halved?(1)

Q2.An electron moving through a magnetic field does not experienced any force. Under which condition it is possible?(1)

Q3.Two wires of same material and of equal lengths are bent in to the form of two loops. One of the loop is square while other is circular. These are suspended in a uniform magnetic field and the same current is passed through them. Which loop will experienced the max torque for same orientation?(1)

Q4.What are the values of (i)the horizontal component of earth magnetic field and(ii)angle of dip at the magnetic north pole of the earth?(1)

Q5.How does the intensity of magnetization of a paramagnetic sample vary with temperature?(1)

Q6.What we conclude from Gauss's law in magnetism?.(1)

Q7.Define the SI unit of magnetic field. A charge moving at right angle to a uniform magnetic field does not undergo change in kinetic energy. why?(2)

Q8.In a galvanometer there is a deflection of 10div per mA. The internal resistance of the galvanometer is 60ohm.If the shunt of 2.5 ohm is connected to the galvanometer and there are 50devisions in all, calculate the max current which the galvanometer can read?(2)

Q9.A bar magnet of magnetic moment  $M$  is aligned parallel to the direction of magnetic field  $B$ . What is the work done to turn the magnet so that to align its magnetic moment (i) opposite to the field direction (ii)normal to the field direction?(2)

Q10.A magnetic compass needle of magnetic moment  $60 \text{ Am}^2$  is placed at a place. The needle points towards north. Using the given data find the angle of dip. Horizontal component of earth magnetic field is  $4 \times 10^{-5}$  tesla and the torque experienced by the needle is  $1.2 \times 10^{-3} \text{ Nm}$ .(2)

Q12.What are permanent magnets? What is an efficient way of preparing a permanent magnet? Write two properties of materials which are required to select them for permanent magnet. (2)

Q13.Two straight parallel current carrying conductors are kept at a distance  $d$  apart from each other in air. The direction of current in both the conductors is the same. Find the magnitude and direction of force between them, Hence define one ampere.(2)

P.T.O.

Q14. Derive an expression for the torque on a rectangular coil of area  $A$ , carrying a current  $I$ , placed in a magnetic field  $B$ . The angle between the direction of magnetic field and perpendicular to the plane of the coil is  $\theta$ . (2)

Q15. Write the basic principle of moving coil galvanometer? Define current sensitivity. On which factors basically it depends? How we can improve current sensitivity of moving coil galvanometer? (3)

Q16. (A) Derive an expression for magnetic field at the axis of a current carrying loop. (2)  
(B) Two loops of radius  $a$  and  $2a$  are carrying same current  $I$  in same direction placed parallel to each other at a distance  $2a\sqrt{3}$  coaxially. Find the direction and magnitude of magnetic field at the centre of the line joining the two centres. (2)

Q17. Three identical specimens of magnetic material Nickel, antimony, aluminium are kept in a magnetic field. Draw the modification in the field lines in each case. Justify your answer. (11/2)

Q18. Two magnets of magnetic moment  $m$  and  $m\sqrt{3}$  are joined perpendicular to form a cross. The combination is suspended in a uniform magnetic field  $B$ . The magnet of magnetic moment  $m$  now makes an angle  $\theta$  with the field direction. Find the value of angle  $\theta$ . (11/2)