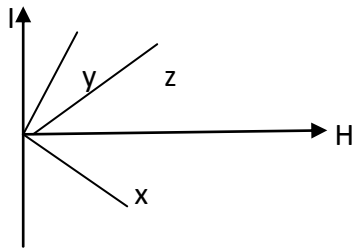
INDIAN SCHOOL NIZWA - WORKSHEET

PHYSICS

CH: 5 MAGNETISM AND MATTER Class: XII

I ANSWER IN DETAIL

1. A magnet 2 cm long has a pole strength of 60Am.find the magnitude of magnetic field strength b at a point on its axis at a distance of 20cm from it. What would be the value of B, if the point were to lie at the same distance on equatorial line of magnet?
2. Two identical thin bar magnets , each of length L and pole strength m are placed at right angles to each other, with the N pole of one touching the S pole of the other. Find the magnetic moment of the system.
3. The variation of intensity of magnetization I and the applied magnetic field intensity H for three magnetic materials X, Y and Z are shown in the graphs.
   (i) Identify the materials X, y and Z
   (ii) Show graphically the variation of susceptibility with temperature for X
   (iii) Out of y and Z which of the materials will you prefer for making transformer cores and why?



4. Horizontal component of earth's magnetization at a place is 3.6×10^{-5} T and dip of the place is 60^0N. Obtain the vertical component and total intensity of earths magnetization.
5. A magnet suspended at 30^0 with magnetic meridian makes an angle of 45^0 with the horizontal. What shall be the value of the angle of dip?
6. The electron in a hydrogen atom is moving with a speed of 2.3×10^6m/s in an orbit of radius 0.53 A^0. Calculate the magnetic moment of the revolving electron.
7. A magnetizing field of 1600Am^{-1} produces a magnetic flux of 2.4×10^{-5} weber in a bar of iron of cross section 0.2 cm^2. Calculate permeability and susceptibility of the bar.
8. A solenoid of 500 turns per metre is carrying a current of 3A. Its core is made of iron, which has a relative permeability of 5000. Determine the magnitudes of magnetic intensity, intensity of magnetization and magnetic field inside the core.

9. The susceptibility of magnesium at 300K is 1.2×10^{-5}. At what temperature will the susceptibility be equal to 1.44×10^{-5}?
10. A proton has spin and magnetic moment just like an electron. Why then its effect is neglected in magnetism of materials?
11. Comment on the state of magnetization of a substance whose atoms contain odd number of electrons.
12. What is the susceptibility and permeability of a perfectly diamagnetic material?
13. What happens to the pole strength and magnetic moment if a bar magnet is cut into two pieces (i) transverse to its length (ii) along its length?
14. What happens if an iron bar magnet is melted? Does it retain its magnetism?
15. A magnetised needle in a uniform magnetic field experiences a torque but no net force. However, an iron nail near a bar magnet experience a force of attraction in addition to a torque. Explain.
16. A ship is to reach a place 10^0south of west. In what direction should it be steered if declination at the place is 17^0 west?
17. Why do magnetic lines of force prefer to pass through ferromagnetic materials?
18. Magnetic field arises due to charges in motion. Can a system have magnetic moment even though its net charge is zero?
19. A magnetized needle of magnetic moment 4.8×10^{-2} jT^{-1} is placed at 30^0 with the direction of uniform magnetic field of magnitude 3×10^{-2}T. Calculate the torque acting on the needle.
20. Horizontal component of earth's magnetic field at a place is √3 times its vertical component. What is the value of angle of dip at that place?