CBSE 12th Physics
Unsolved Important Questions
Chapter 5

1 Mark Questions:

Q.1. Where on the surface of Earth is the· angle of dip 90°?

Q.2. The permeability of a magnetic material is 0.9983. Name the type of magnetic materials it represents.

Q.3. The horizontal component of the earth's magnetic field at a place is B and angle of dip is 60^0 is the value of vertical component of earth's magnetic field at equator?

Q.4. At a place, the horizontal component of earth's magnetic field is B and angle of dip is 60°. What is the value of horizontal component of the earth's magnetic field at equator?

Q.5. A proton and an electron travelling along parallel paths enter a region of uniform magnetic field, acting perpendicular to their paths. Which of them will move in a circular path with higher frequency?

2 Mark Questions:

Q.6. If χ stands for the magnetic susceptibility of given material, identify the class of material for which

(i) $-1 \geq \chi < 0$
(ii) $0 < \chi < \epsilon$**(ϵ stands for a small positive number)**

Q.7. Show diagrammatically the behavior of magnetic field lines in the presence of:

(i) Paramagnetic and

(ii) Diamagnetic substance. How does one explain this distinguishing feature?

Q.8. Define magnetic susceptibility of a material. Name two elements, one having positive susceptibility and the other having negative susceptibility. What does negative susceptibility signify?

Q.9. (i) Write two characteristics of a material used for making permanent magnets.
(ii) Why is core of an electromagnet made of ferromagnetic materials?

Q.10. Draw magnetic field lines when a (i) diamagnetic, (ii) paramagnetic substance is placed in an external magnetic field. Which magnetic property distinguishes this behavior of the field lines due to the two substances?

Q.11. A magnetic needle free to rotate in a vertical plane parallel to the magnetic meridian has its north tip down at 60° with the horizontal. The horizontal component of the earth's magnetic field at the place is known to be 0.4 G. Determine the magnitude of the earth's magnetic field at the place.

Q.12. The susceptibility of a magnetic material is -2.6×10^{-5}. Identify the type of magnetic material and state its two properties.

Q.13. Out of the *two* magnetic materials, 'A' has relative permeability slightly greater than unity while 'B' has less than unity. Identify the nature of the materials 'A' and 'B'. Will their susceptibilities be positive or negative?

3 Mark Questions:

Q.14. (a) An iron ring of relative permeability μ_r has windings of insulated copper wire of n turns per metre. When the current in the windings is I, find the expression for the magnetic field in the ring.

(b) the susceptibility of a magnetic material is 0.9853. Identify the type of magnetic material. Draw the modification of the field pattern on keeping a piece of this material in a uniform magnetic field.