One Two academy

Std 12 Physics Unit -3

Time: 60 minutes

Choose the correct answer:-

1. Tesla is the unit of

(a) magnetic flux
(b) magnetic field
(c) magnetic induction
(d) magnetic moment
2. A long solenoid carrying a current produces a magnetic field **B** along its axis. If the the
current is doubled and the number of turns per cm is halved, the new value of the magnetic field

is (a) 2B	(b) 4B	(c) $\frac{B}{2}$	(d) B

3. Three wires of equal lengths are bent in the form of loops. One of the loops is circle, another is a semi-circle and the third one is a square. They are placed in a uniform magnetic field and same electric current is passed through them. Which of the following loop configuration will experience greater torque ?(a) circle(b) semi-circle(c) square(d) all of them

4. The vertical component of Earth's magnetic field at a place is equal to the horizontal component. What is the value of angle of dip at this place? (a) 30° (b) 45° (c) 60° (d) 90° 5. A simple pendulum with charged bob is oscillating with time period T and let θ be the angular displacement. If the uniform magnetic field is switched ON in a direction perpendicular to the plane of oscillation then-

- (a) time period will decrease but θ will remain constant
- (b) time period remain constant but θ will decrease
- (c) both T and θ will remain the same
- (d) both T and θ will decrease

Answer any three of the following questions:-

6. What is meant by hysteresis?

7. Define one Ampere.

8. State Meissner effect.

9. What are permanent magnets.

Answer any three of the following questions:

10. State Biot - Savarat's law.

11. Two materials X and Y are magnetised whose intensity of magnetisation are 500 Am⁻¹ and 2000 Am⁻¹ respectively. The magnetising field is 1000 Am⁻¹. What is the ratio between susceptibilities of the two material.

- 12. Give an account on Magnetic Lorentz force.
- 13. Compute the torque experienced by a magnetic needle in a uniform magnetic field.Answer the following questions: $3 \times 5 = 15$

14. Calculate the magnetic field inside and outside of the long solenoid using Ampere's circuital law.

OR

What is tangent law? Discuss in detail.

Maximum marks: 35 $5 \times 1 = 5$

3 x 2 = 6

 $3 \times 3 = 9$

15. Obtain a relation for the magnetic induction at a point along the axis of a circular coil carrying current.

OR

Deduce the relation for the magnetic induction at a point due to an infinitely long straight conductor carrying current.

16. Derive the expression for the force between two long parallel, current-carrying conductors.

OR

- a.Compare dia, para and ferro magnetism.
- b. Classify the following into dia, para and ferro magnets. (Water, Bismuth, Aluminium)

All the Best