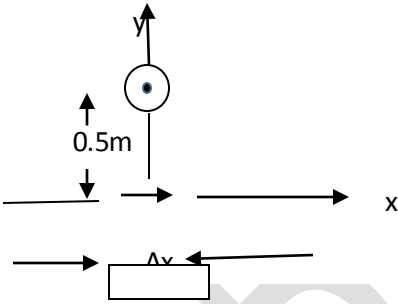


## MAGNETIC EFFECTS OF CURRENT

### Test Paper-II

**MAX MARKS: 30**
**TIME: 90Mts**

Sl. No.	QUESTION	ANSWER PAGE	MARKS
1	State Biot-Savart law. Compare Biot-Savart Law with that of Coulomb's law for the electrostatic field.	Page:143	3
2	Derive the expression for finding the magnetic field on the axis of a circular current loop using Biot-Savart Law.	Page:145	3
3	An element $\Delta l = \Delta x \hat{i}$ is placed at the origin and carries a large current $I = 10A$ . What is the magnetic field on the y-axis at a distance of 0.5m? $\Delta x = 1 \text{ cm}$ .	Page:144	2
			
4	State the rule to find the direction of magnetic field surrounding a current carrying conductor.	Page:146	1
5	Give the formula to find the magnetic field at the center of a circular coil carrying current. Consider a tightly wound 100 turn coil of radius 10cm, carrying a current of 1A. What is the magnitude of the magnetic field at the center of the coil?	Page:147	3
6	State Ampere's circuital law. Also derive an expression to find the magnetic field due to a straight current-carrying wire.	Page:147	3
7	State the conditions under which Ampere's circuital holds good.	Page:148	1
8	What is a solenoid? Draw a diagram showing the magnetic field due to a current carrying solenoid.	Page:151	2
9	Using Ampere's circuital law find the magnetic field due to a solenoid.	Page:152	2
10	What is a toroid? Derive the expression to find the magnetic field due to a toroid. How is different from that of a solenoid?	Page:153	3

- 11 A solenoid of length 0.5m has a radius of 1 cm and is made up of 500 turns. It carries a current of 5A. What is the magnitude of the magnetic field inside the solenoid? 3  
Page:154
- 12 Derive the expression to find the force between two parallel current carrying conductors separated by some distance. What is the nature of the force if the current flowing through the conductors is (a) in the same direction and (ii) in the opposite direction? 3  
Page:154
- 13 Define Ampere in terms of force existing between any two parallel current carrying conductors separated by some distance. 1  
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