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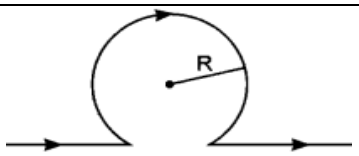
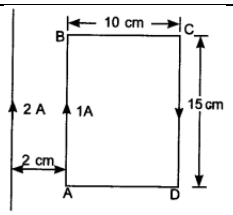
SUB:-PHYSICS CLASS XII 2022-23

PRACTICE PAPER UNIT- IV–MOVING CHARGES AND MAGNETISM

Note: Q. No. 1-4 is of 01 mark each, Q. 5-6 is of 02 marks each, Q.No.7 is of 03 marks, Q. No. 8 is a case study based and is of 04 marks, Q. No. 11 is of 5 marks.

SN	Question	Marks
1	The strength of magnetic field at the centre of circular coil is (a) $\frac{\mu_0 I}{R}\left(1-\frac{1}{\pi}\right)$ (b) $\frac{\mu_0 I}{\pi R}$ (c) $\frac{\mu_0 I}{2R}\left(1-\frac{1}{\pi}\right)$ (d) $\frac{\mu_0 I}{2R}\left(1+\frac{1}{\pi}\right)$ 	1
2	**Assertion (A):** The coils of a spring come close to each other, when current is passed through it. **Reason (R):** It is because, the coils of a spring carry current in the same direction and hence attract each other. a- Both assertion and reason are correct and the reason is the correct explanation of assertion. b- Both assertion and reason are correct and reason is not a correct explanation of assertion. c- Assertion is correct but the reason is incorrect d- Assertion is incorrect but the reason is correct.	1
3	What is the net force on the rectangular coil? (a) 25×10^{-7} N towards wire. (b) 25×10^{-7} N away from wire. (c) 35×10^{-7} N towards wire. (d) 35×10^{-7} N away from wire. 	1
4	A positive charge enters in a magnetic field and travels parallel to but opposite the field. If experiences (a) an upward force. (b) a downward force. (c) an accelerated force. (d) no force.	1
5	An α–particle and a proton are moving in the plane of paper in a region where there is a uniform magnetic field B " directed normal to the plane of the paper. If the particles have equal linear momenta, what would be the ratio of the radii of their trajectories in the field?	2
6	State two reasons why a galvanometer cannot be used as such to measure current in a given circuit.	2
7	Write any two important points of similarities and differences each between Coulomb's law for the electrostatic field and Biot-Savart's law for the magnetic field.	3
	Case study-based questions (questions no 8- 11) Conversion of Galvanometer into Ammeter A galvanometer may be converted into ammeter by using very small resistance in parallel with the galvanometer coil. The small resistance connected in parallel is called a shunt. If G is resistance of galvanometer, Ig is current in galvanometer for full scale deflection, then for conversion of galvanometer into ammeter of range I ampere, the shunt is given by $\mathbf{S = \frac{I_g}{I - I_g} G}$ 8. What is a shunt? 1 9. Can we increase or decrease the range of an ammeter? 1 10. What is the net resistance of an ammeter? 2 OR	4

	10. A galvanometer has a resistance of 15 Ω and the meter shows full scale deflection for a current of 4 mA. How will you convert the meter into an ammeter of range 0 to 6 A? 2	
11	(i) State Biot-Savart Law. Using this law, find an expression for the magnetic field at the centre of a circular coil of N-turns, radius R, carrying current I. 3 (ii) Sketch the magnetic field for a circular current loop, clearly indicating the direction of the field. 2	5