

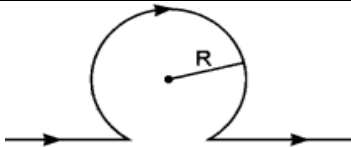
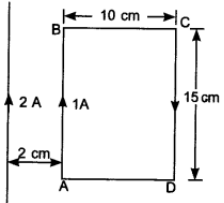
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SUB:-PHYSICS CLASS XII 2022-23

REVISION 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.

S N	Question	Ma rks
1	<p>The strength of magnetic field at the centre of circular coil is</p> <div style="display: flex; justify-content: space-between; align-items: center;"> <div> <p>(a) $\frac{\mu_0 I}{R} \left(1 - \frac{1}{\pi}\right)$ (b) $\frac{\mu_0 I}{\pi R}$</p> <p>(c) $\frac{\mu_0 I}{2R} \left(1 - \frac{1}{\pi}\right)$ (d) $\frac{\mu_0 I}{2R} \left(1 + \frac{1}{\pi}\right)$</p> </div>  </div>	1
2	<p>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.</p> <p>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.</p>	1
3	<p>What is the net force on the rectangular coil?</p> <p>(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.</p> 	1
4	<p>A positive charge enters in a magnetic field and travels parallel to but opposite the field. If experiences</p> <p>(a) an upward force. (b) a downward force. (c) an accelerated force. (d) no force.</p>	1
5	<p>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?</p>	2
6	<p>State two reasons why a galvanometer cannot be used as such to measure current in a given circuit.</p>	2
7	<p>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.</p>	3
	<p>Case study-based questions (questions no 8- 11) Conversion of Galvanometer into Ammeter</p> <p>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, I_g is current in galvanometer for full scale deflection, then for conversion of galvanometer into ammeter of range I ampere, the shunt is given by $S = \frac{I_g}{I - I_g} G$</p> <p>8. What is a shunt? 1</p> <p>9. Can we increase or decrease the range of an ammeter? 1</p> <p>10. What is the net resistance of an ammeter? 2</p> <p style="text-align: center;">OR</p>	4

	10. A galvanometer has a resistance of $15\ \Omega$ 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. (ii) Sketch the magnetic field for a circular current loop, clearly indicating the direction of the field.	3 2	5