

NEET MOVING CHARGES AND MAGNETISM — BIOT-SAVART LAW — PYQS

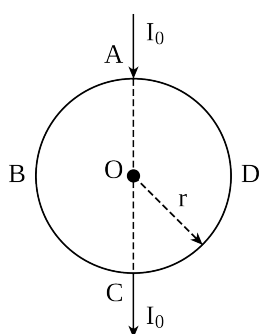
Max. Marks: 40

Questions: 10

Section A (MCQ) — 10 questions

- Q.1** A current I_0 flows through a metallic circular loop of radius r as shown in the figure. Resistance of the segment ABC is half that of ADC. Magnitude of magnetic field at the centre O of the loop is :

[RE-NEET (UG) 2026]



- (1) $\frac{\mu_0 I_0}{2\pi r}$ (2) $\frac{\mu_0 I_0}{12r}$ (3) $\frac{\mu_0 I_0}{4r}$ (4) $\frac{\mu_0 I_0}{2r}$

Scan or tap for the full solution



- Q.2** A tightly wound 100 turns coil of radius 10 cm carries a current of 7 A. The magnitude of the magnetic field at the centre of the coil is (Take permeability of free space as $4\pi \times 10^{-7}$ SI units):

[NEET (UG) 2024]

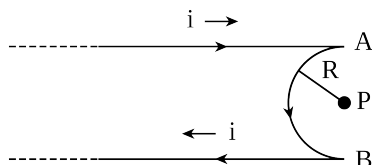
- (1) 44 mT (2) 4.4 T (3) 4.4 mT (4) 44 T

Scan or tap for the full solution



- Q.3** A very long conducting wire is bent in a semi-circular shape from A to B as shown in figure. The magnetic field at point P for steady current configuration is given by :

[NEET (UG) 2023]



- (1) $\frac{\mu_0 i}{4R}$ pointed away from the page
 (2) $\frac{\mu_0 i}{4R} \left[1 - \frac{2}{\pi} \right]$ pointed away from page
 (3) $\frac{\mu_0 i}{4R} \left[1 - \frac{2}{\pi} \right]$ pointed into the page
 (4) $\frac{\mu_0 i}{4R}$ pointed into the page

Scan or tap for the full solution



- Q.4** Given below are two statements:
 In light of above statements choose the most appropriate answer from the options given below.

Statement-I: Biot-Savart's law gives us the expression for the magnetic field strength of an infinitesimal current element ($I dl$) of a current carrying conductor only.

Statement-II: Biot-Savart's law is analogous to Coulomb's inverse square law of charge q , with the former being related to the field produced by a scalar source, $I dl$ while the latter being produced by a vector source, q .

[NEET (UG) 2022]

- (1) Both Statement-I and Statement-II are correct
 (2) Both Statement-I and Statement-II are incorrect
 (3) Statement-I is correct and Statement-II is incorrect
 (4) Statement-I is incorrect and Statement-II is correct

Scan or tap for the full solution



- Q.5** The shape of the magnetic field lines due to an infinite long, straight current carrying conductor is

[NEET (UG) 2022 (Phase 2)]

- (1) a plane (2) a straight line
 (3) circular (4) elliptical

Scan or tap for the full solution



- Q.6** A long wire carrying a steady current is bent into a circular loop of one turn. The magnetic field at the centre of the loop is B . It is then bent into a circular coil of n turns. The magnetic field at the centre of this coil of n turns will be

[NEET 2016 (Phase 2)]

- (1) nB (2) n^2B (3) $2nB$ (4) $2n^2B$

Scan or tap for the
full solution



- Q.7** An electron moving in a circular orbit of radius r makes n rotations per second. The magnetic field produced at the centre has magnitude

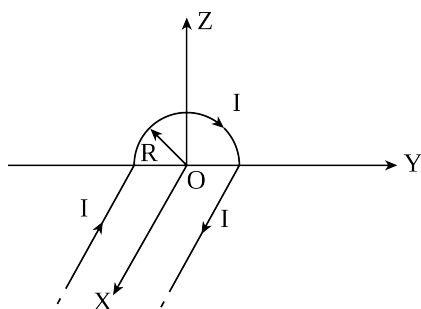
[AIPMT 2015 (Cancelled)]

- (1) $\frac{\mu_0 n^2 e}{r}$ (2) $\frac{\mu_0 n e}{2r}$ (3) $\frac{\mu_0 n e}{2\pi r}$ (4) Zero

Scan or tap for the
full solution



- Q.8** A wire carrying current I has the shape shown in adjoining figure.



Linear parts of the wire are very long and parallel to X-axis while semicircular portion of radius R is lying in Y-Z plane. Magnetic field at point O is

[AIPMT 2015 (Cancelled)]

- (1) $\vec{B} = -\frac{\mu_0 I}{4\pi R}(\pi\hat{i} + 2\hat{k})$ (2) $\vec{B} = \frac{\mu_0 I}{4\pi R}(\pi\hat{i} - 2\hat{k})$
 (3) $\vec{B} = \frac{\mu_0 I}{4\pi R}(\pi\hat{i} + 2\hat{k})$ (4) $\vec{B} = -\frac{\mu_0 I}{4\pi R}(\pi\hat{i} - 2\hat{k})$

Scan or tap for the
full solution



- Q.9** A current loop consists of two identical semicircular parts each of radius R , one lying in the x-y plane and the other in x-z plane. If the current in the loop is i . The resultant magnetic field due to the two semicircular parts at their common centre is

[AIPMT 2010 (Mains)]

- (1) $\frac{\mu_0 i}{2\sqrt{2}R}$ (2) $\frac{\mu_0 i}{2R}$ (3) $\frac{\mu_0 i}{4R}$ (4) $\frac{\mu_0 i}{\sqrt{2}R}$

Scan or tap for the
full solution



- Q.10** An electron moves in a circular orbit with a uniform speed v . It produces a magnetic field B at the centre of the circle. The radius of the circle is proportional to

[AIPMT 2005]

- (1) $\sqrt{B/v}$ (2) B/v (3) $\sqrt{v/B}$ (4) v/B

Scan or tap for the
full solution



ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	
Ans.	2	3	2	3	3	2	2	1	1	3	