

PYQSide

JEE MAIN MOVING CHARGES AND MAGNETISM — BIOT-SAVART LAW — PYQS

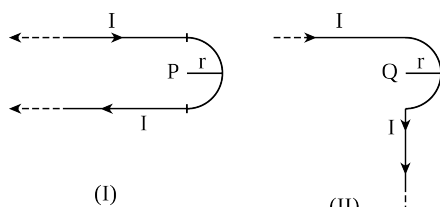
Max. Marks: 24

Questions: 6

Section A (MCQ)

- Q.1** Two identical long current carrying wires are bent into the shapes shown in the following figures. If the magnitude of magnetic fields at the centres P and Q of a semicircular arc are B_1 and B_2 respectively, then the ratio $\frac{B_1}{B_2}$ is _____.

[JEE Main 2026 (Online) 2nd April Morning Shift]



- (1) $\frac{2+\pi}{1+\pi}$ (2) $\frac{1+\pi}{1-\pi}$ (3) $\frac{2+\pi}{1-\pi}$ (4) $\frac{1+\pi}{2-\pi}$

Scan or tap for the full solution



- Q.2** The current passing through a conducting loop in the form of equilateral triangle of side $4\sqrt{3}$ cm is 2 A. The magnetic field at its centroid is $\alpha \times 10^{-5}$ T. The value of α is _____.
(Given: $\mu_0 = 4\pi \times 10^{-7}$ SI units)

[JEE Main 2026 (Online) 23rd January Evening Shift]

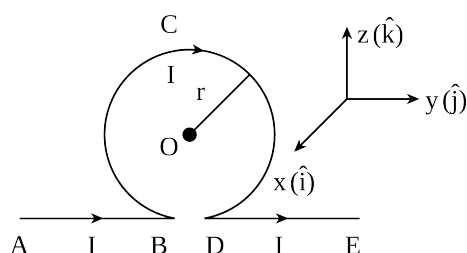
- (1) $3\sqrt{3}$ (2) $2\sqrt{3}$ (3) $\sqrt{3}$ (4) $\frac{\sqrt{3}}{2}$

Scan or tap for the full solution



- Q.3** An infinitely long straight wire carrying current I is bent in a planar shape as shown in the diagram. The radius of the circular part is r. The magnetic field at the centre O of the circular loop is :

[JEE Main 2026 (Online) 21st January Evening Shift]



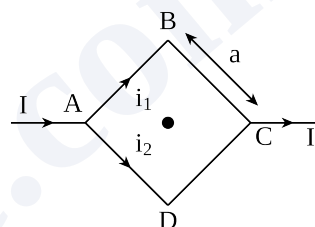
- (1) $-\frac{\mu_0 I}{2\pi r}(\pi+1)\hat{i}$ (2) $-\frac{\mu_0 I}{2\pi r}(\pi-1)\hat{i}$
(3) $\frac{\mu_0 I}{2\pi r}(\pi+1)\hat{i}$ (4) $\frac{\mu_0 I}{2\pi r}(\pi-1)\hat{i}$

Scan or tap for the full solution



- Q.4** Figure shows a current carrying square loop ABCD of edge length 'a' lying in a plane. If the resistance of the ABC part is r and that of ADC part is 2r, then the magnitude of the resultant magnetic field at centre of the square loop is

[JEE Main 2025 (Online) 8th April Evening Shift]

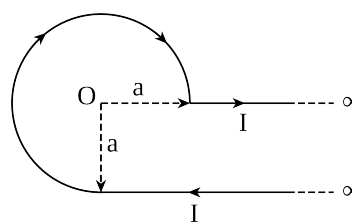


- (1) $\frac{2\mu_0 I}{3\pi a}$ (2) $\frac{\sqrt{2}\mu_0 I}{3\pi a}$
(3) $\frac{3\pi\mu_0 I}{\sqrt{2}a}$ (4) $\frac{\mu_0 I}{2\pi a}$

Scan or tap for the full solution



Q.5



- An infinite wire has a circular bend of radius a, and carrying a current I as shown in the figure. The magnitude of magnetic field at the origin O of the arc is given by:

[JEE Main 2025 (Online) 28th January Evening Shift]

- (1) $\frac{\mu_0 I}{2\pi a} \left[\frac{\pi}{2} + 2 \right]$ (2) $\frac{\mu_0 I}{4\pi a} \left[\frac{3\pi}{2} + 1 \right]$
(3) $\frac{\mu_0 I}{4\pi a} \left[\frac{\pi}{2} + 1 \right]$ (4) $\frac{\mu_0 I}{4\pi a} \left[\frac{3\pi}{2} + 2 \right]$

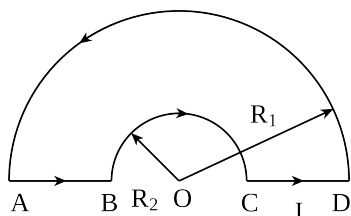
Scan or tap for the full solution



Section B (Numerical)

- Q.6** A loop ABCDA, carrying current $I = 12\text{ A}$, is placed in a plane, consists of two semi-circular segments of radius $R_1 = 6\pi\text{ m}$ and $R_2 = 4\pi\text{ m}$. The magnitude of the resultant magnetic field at center O is $k \times 10^{-7}\text{ T}$. The value of k is _____.
(Given $\mu_0 = 4\pi \times 10^{-7}\text{ T m A}^{-1}$)

[JEE Main 2025 (Online) 3rd April Morning Shift]



Scan or tap for the full solution



ANSWER KEY

Section A (MCQ)

Ques.	1	2	3	4	5						
Ans.	1	1	2	2	2						

Section B (Numerical)

Ques.	6										
Ans.	1										