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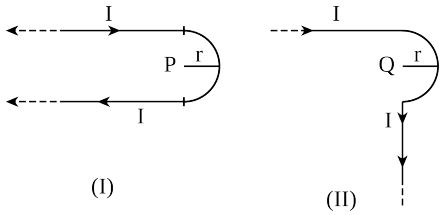
JEE MAIN MOVING CHARGES AND MAGNETISM — BIOT–SAVART LAW — PYQS

Max. Marks: 28 **Questions:** 7

Section A (MCQ) — 5 questions

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)

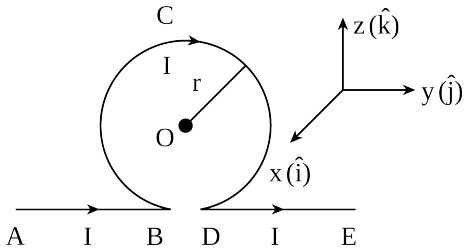
[JEE Main 2026 (Online) 23rd January Evening Shift]

(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]



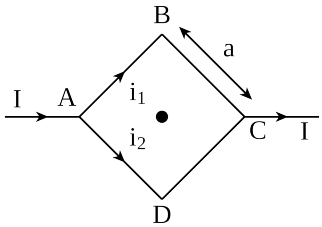
(1) $-\frac{\mu_0 I}{2\pi r}(\pi+1)\hat{i}$ (2) $-\frac{\mu_0 I}{2\pi r}(\pi-1)\hat{i}$

(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]

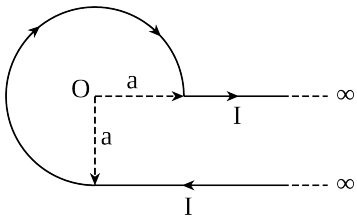


(1) $\frac{2\mu_0 I}{3\pi a}$ (2) $\frac{\sqrt{2}\mu_0 I}{3\pi a}$

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

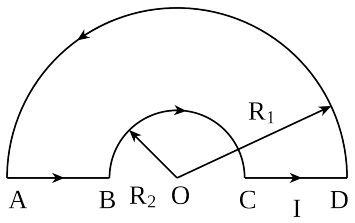
(3) $\frac{\mu_0 I}{4\pi a}\left[\frac{\pi}{2}+1\right]$ (4) $\frac{\mu_0 I}{4\pi a}\left[\frac{3\pi}{2}+2\right]$

Scan or tap for the full solution

Section B (Numerical) — 2 questions

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

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



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Q.7 A current of 5 A exists in a square loop of side $\frac{1}{\sqrt{2}}$ m. Then the magnitude of the magnetic field B at the centre of the square loop will be $p \times 10^{-6}$ T. where, value of p is _____ [Take $\mu_0 = 4\pi \times 10^{-7}$ T m A^{-1}].

[JEE Main 2025 (Online) 24th January Morning Shift]

Scan or tap for the full solution

ANSWER KEY

Section A (MCQ) — 5 questions

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

Section B (Numerical) — 2 questions

Ques.	6	7									
Ans.	**1**	**8**									