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NEET MOVING CHARGES AND MAGNETISM — MAGNETIC FORCE ON A CURRENT-CARRYING CONDUCTOR — PYQS

Max. Marks: 24 **Questions:** 6

Section A (MCQ) — 6 questions

Q.1 A wire carrying a current I along the positive x-axis has length L. It is kept in a magnetic field $\vec{B} = (2\hat{i} + 3\hat{j} - 4\hat{k})$ T. The magnitude of the magnetic force acting on the wire is : [NEET (UG) 2023]

(1) $\sqrt{5}$ IL (2) 5 IL (3) $\sqrt{3}$ IL (4) 3 IL

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Q.2 A metallic rod of mass per unit length 0.5 kg m^{-1} is lying horizontally on a smooth inclined plane which makes an angle of 30° with the horizontal. The rod is not allowed to slide down by flowing a current through it when a magnetic field of induction 0.25 T is acting on it in the vertical direction. The current flowing in the rod to keep it stationary is [NEET 2018]

(1) 7.14 A (2) 5.98 A (3) 14.76 A (4) 11.32 A

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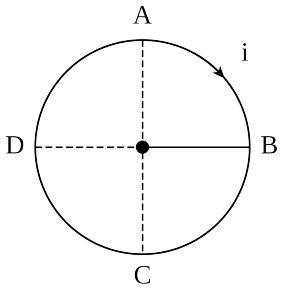
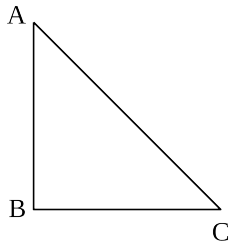
Q.3 A circular coil ABCD carrying a current 'i' is placed in a uniform magnetic field. If the magnetic force on the segment AB is $\vec{F}$, the force on the remaining segment BCDA is [NEET 2013 (Karnataka)]



(1) $-\vec{F}$ (2) $3\vec{F}$ (3) $-3\vec{F}$ (4) $\vec{F}$

Scan or tap for the full solution

Q.4 A current carrying closed loop in the form of a right angle isosceles triangle ABC is placed in uniform magnetic field acting along AB. If the magnetic force on the arm BC is $\vec{F}$, the force on the arm AC is [AIPMT 2011 (Prelims)]



(1) $-\sqrt{2}\,\vec{F}$ (2) $-\vec{F}$ (3) $\vec{F}$ (4) $\sqrt{2}\,\vec{F}$

Scan or tap for the full solution

Q.5 A square current carrying loop is suspended in a uniform magnetic field acting in the plane of the loop. If the force on one arm of the loop is $\vec{F}$, the net force on the remaining three arms of the loop is [AIPMT 2010 (Prelims)]

(1) $3\vec{F}$ (2) $-\vec{F}$ (3) $-3\vec{F}$ (4) $\vec{F}$

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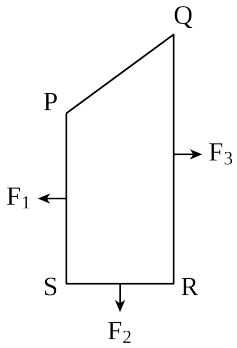
Q.6 A closed loop PQRS carrying a current is placed in a uniform magnetic field. If the magnetic forces on segments PS, SR and RQ are F_1, F_2 and F_3 respectively and are in the plane of the paper and along the directions shown, the force on the segment QP is [AIPMT 2008]



(1) $\sqrt{(F_3 - F_1)^2 - F_2^2}$ (2) $F_3 - F_1 + F_2$

(3) $F_3 - F_1 - F_2$ (4) $\sqrt{(F_3 - F_1)^2 + F_2^2}$

Scan or tap for the full solution

ANSWER KEY

Ques.	1	2	3	4	5	6					
Ans.	**2**	**4**	**1**	**2**	**2**	**4**					