

PYQSide

NEET MOVING CHARGES AND MAGNETISM — TORQUE ON A CURRENT LOOP, MAGNETIC DIPOLE MOMENT — PYQS

Max. Marks: 36

Questions: 9

Section A (MCQ)

Q.1 A 2 amp current is flowing through two different small circular copper coils having radii ratio 1:2. The ratio of their respective magnetic moments will be [NEET (UG) 2025]

- (1) 2:1 (2) 4:1 (3) 1:4 (4) 1:2

Scan or tap for the full solution



Q.2 A uniform conducting wire of length $12a$ and resistance ' R ' is wound up as a current carrying coil in the shape of,

- (i) an equilateral triangle of side ' a '
(ii) A square of side ' a '

The magnetic dipole moments of the coil in each case respectively are : [NEET (UG) 2021]

- (1) $4Ia^2$ and $3Ia^2$ (2) $\sqrt{3} Ia^2$ and $3Ia^2$
(3) $3Ia^2$ and Ia^2 (4) $3Ia^2$ and $4Ia^2$

Scan or tap for the full solution



Q.3 A 250-turn rectangular coil of length 2.1 cm and width 1.25 cm carries a current of 85 μ A and subjected to a magnetic field of strength 0.85 T. Work done for rotating the coil by 180° against the torque is [NEET 2017]

- (1) 4.55 μ J (2) 2.3 μ J (3) 1.15 μ J (4) 9.1 μ J

Scan or tap for the full solution



Q.4 A rectangular coil of length 0.12 m and width 0.1 m having 50 turns of wire is suspended vertically in a uniform magnetic field of strength 0.2 weber/m². The coil carries a current of 2 A. If the plane of the coil is inclined at an angle of 30° with the direction of the field, the torque required to keep the coil in stable equilibrium will be [AIPMT 2015]

- (1) 0.24 Nm (2) 0.12 Nm
(3) 0.15 Nm (4) 0.20 Nm

Scan or tap for the full solution



Q.5 A current loop in a magnetic field [NEET 2013]

- (1) can be in equilibrium in two orientations, both the equilibrium states are unstable.
(2) can be in equilibrium in two orientations, one stable while the other is unstable.
(3) experiences a torque whether the field is uniform or non uniform in all orientations.
(4) can be in equilibrium in one orientation.

Scan or tap for the full solution



Q.6 A closely wound solenoid of 2000 turns and area of cross-section $1.5 \times 10^{-4} \text{ m}^2$ carries a current of 2.0 A. It is suspended through its centre and perpendicular to its length, allowing it to turn in a horizontal plane in a uniform magnetic field 5×10^{-2} tesla making an angle of 30° with the axis of the solenoid. The torque on the solenoid will be [AIPMT 2010 (Mains)]

- (1) $3 \times 10^{-3} \text{ N m}$ (2) $1.5 \times 10^{-3} \text{ N m}$
(3) $1.5 \times 10^{-2} \text{ N m}$ (4) $3 \times 10^{-2} \text{ N m}$

Scan or tap for the full solution



Q.7 A charged particle (charge q) is moving in a circle of radius R with uniform speed v . The associated magnetic moment μ is given by [AIPMT 2007]

- (1) qvR^2 (2) $qvR^2/2$ (3) qvR (4) $qvR/2$

Scan or tap for the full solution



Q.8 A coil in the shape of an equilateral triangle of side l is suspended between the pole pieces of a permanent magnet such that $\vec{B}$ is in plane of the coil. If due to a current i in the triangle a torque τ acts on it, the side l of the triangle is [AIPMT 2005]

- (1) $\frac{2}{\sqrt{3}} \left(\frac{\tau}{Bi} \right)$ (2) $2 \left(\frac{\tau}{\sqrt{3}Bi} \right)^{1/2}$
(3) $\frac{2}{\sqrt{3}} \left(\frac{\tau}{Bi} \right)^{1/2}$ (4) $\frac{1}{\sqrt{3}} \frac{\tau}{Bi}$

Scan or tap for the full solution



Q.9 If number of turns, area and current through a coil is given by n , A and i respectively then its magnetic moment will be [AIPMT 2001]

- (1) niA (2) n^2iA (3) niA^2 (4) $\frac{ni}{\sqrt{A}}$

Scan or tap for the
full solution



ANSWER KEY

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