

JEE MAIN MOVING CHARGES AND MAGNETISM — MAGNETIC FORCE ON A MOVING CHARGE (LORENTZ FORCE) — PYQS

Max. Marks: 16
Questions: 4

Section A (MCQ) — 2 questions

- Q.1** A particle having charge 10^{-9} C moving in x-y plane in fields of $0.4\hat{j}$ N/C and $4 \times 10^{-3}\hat{k}$ T experiences a force of $(4\hat{i} + 2\hat{j}) \times 10^{-10}$ N. The velocity of the particle at that instant is _____ m/s.

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

- (1) $50\hat{i} + 100\hat{j}$ (2) $100\hat{i} + 50\hat{j}$
 (3) $-50\hat{i} + 100\hat{j}$ (4) $50\hat{i} - 100\hat{j}$

Scan or tap for the
full solution



- Q.2** A current carrying solenoid is placed vertically and a particle of mass m with charge Q is released from rest. The particle moves along the axis of solenoid. If g is acceleration due to gravity then the acceleration (a) of the charged particle will satisfy :

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

- (1) $a > g$ (2) $a = 0$
 (3) $0 < a < g$ (4) $a = g$

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Section B (Numerical) — 2 questions

- Q.3** The charged particle moving in a uniform magnetic field of $(3\hat{i} + 2\hat{j})$ T has an acceleration $(4\hat{i} - \frac{x}{2}\hat{j})$ m/s^2 . The value of x is _____.

[JEE Main 2026 (Online) 5th April Morning Shift]

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- Q.4** $1 \mu\text{C}$ charge moving with velocity $\vec{v} = (\hat{i} - 2\hat{j} + 3\hat{k})$ m/s in the region of magnetic field $\vec{B} = (2\hat{i} + 3\hat{j} - 5\hat{k})$ T. The magnitude of force acting on it is $\sqrt{\alpha} \times 10^{-6}$ N. The value of α is _____.

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

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ANSWER KEY

Section A (MCQ) — 2 questions

Ques.	1	2									
Ans.	1	4									

Section B (Numerical) — 2 questions

Ques.	3	4						
Ans.	12	171						