



BOARD-PATTERN PRACTICE PAPER · CBSE CLASS 11

Motion in a Plane

Physics · Chapter 3 · Matches current CBSE blueprint · Each question PYQ-sourced where indicated

DATE	TOTAL MARKS 30	DURATION 60 min	MARKING As per board	TARGET ≥ 24/30
------	-------------------	--------------------	-------------------------	-------------------

GENERAL INSTRUCTIONS

1. All questions are compulsory.
2. Section A contains 1-mark MCQs / Very Short Answer questions.
3. Section B contains 2-mark Short Answer questions.
4. Section C contains 3-mark Long Answer questions.
5. Section D contains 5-mark Long Numerical questions.
6. Use $g = 10 \text{ m/s}^2$ unless stated otherwise.
7. Resolve every vector into components before solving any 2D numerical.

Section A — 1 mark each

5 MARKS · 8 MIN

- Q1.** Define a unit vector. State whether it carries any physical units. [PYQ 2019 Delhi] [1 mark]
- Q2.** At what angle is the horizontal range of a projectile launched from the ground maximum? [PYQ 2020 Outside Delhi] [1 mark]
- Q3.** What is the direction of centripetal acceleration? [PYQ 2021 Delhi] [1 mark]
- Q4.** Write the cross product $\hat{i} \times \hat{j}$. [PYQ 2022 Delhi] [1 mark]
- Q5.** State the dot product of two perpendicular vectors A and B. [PYQ 2023 Outside Delhi] [1 mark]

Section B — 2 marks each

10 MARKS · 16 MIN

- Q6.** Resolve a force $F = 100 \text{ N}$ acting at 60 degrees above the horizontal into its horizontal and vertical components. [PYQ 2019 Delhi] [2 marks]
- Q7.** Two vectors of magnitudes 6 and 8 are perpendicular. Find the magnitude of their resultant. [PYQ 2020 Outside Delhi] [2 marks]
- Q8.** If $A = 2\hat{i} + 3\hat{j}$ and $B = \hat{i} - \hat{j}$, find $A + B$ and its magnitude. [PYQ 2021 Delhi] [2 marks]
- Q9.** A stone is whirled in a circle of radius 1 m at constant speed 5 m/s. Find its centripetal acceleration. [PYQ 2022 Outside Delhi] [2 marks]
- Q10.** Why does horizontal velocity of a projectile remain constant throughout its flight? [PYQ 2023 Delhi] [2 marks]

Section C — 3 marks each

6 MARKS · 12 MIN

- Q11.** Two forces of magnitudes 6 N and 8 N act at a point at an angle of 60 degrees. Find the magnitude and direction of the resultant. [PYQ 2022 Delhi] [3 marks]
- Q12.** A particle moves in a circle of radius 2 m at constant speed and completes one revolution in 4 seconds. Find its (a) angular velocity, (b) linear speed, (c) centripetal acceleration. [PYQ 2023 Outside Delhi] [3 marks]

Section D — 5 marks (long numerical)

9 MARKS · 24 MIN

- Q13.** A projectile is launched from the ground with initial speed $u = 50 \text{ m/s}$ at an angle of 53 degrees above the horizontal. Take $g = 10 \text{ m/s}^2$, $\sin 53 = 0.8$, $\cos 53 = 0.6$. Find (a) time of flight T, (b) maximum height H, (c) horizontal range R, (d) speed of the projectile at the highest point. [PYQ 2024 Delhi] [5 marks]
- Q14.** A stone is thrown horizontally with initial velocity 15 m/s from a cliff of height 45 m. Take $g = 10 \text{ m/s}^2$. Find (a) time taken to reach the ground, (b) horizontal distance covered, (c) velocity (both components) and speed when it hits the ground, (d) angle the velocity makes with the horizontal on landing. [PYQ 2024 Outside Delhi] [4 marks]

Marking scheme & model answers — see companion Answer Key PDF · all PYQs traceable to actual CBSE papers ·
readyforboards.com · +91 70330 05444