AL AMAL LEARNING CENTER

PHYSICS KEY BOOK

Class 9 | Unit 2

KINEMATICS

MULTIPLE CHOICE QUESTIONS

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About this part

All 14 multiple choice questions of the Class 9 Physics Unit 2 exercise with the correct option and a short reason. Each answer shows the working, because understanding the reason helps in the paper.

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PART MULTIPLE CHOICE QUESTIONS (Q I)

Answer key at a glance

Q	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Ans	B	D	B	D	A	B	A	A	B	C	A	B	D	C

Explained answers

Choose the best possible option. The correct option is marked ✓.

	Question and options	Answer	Why
1	**Change in position of a body from initial to final point is called:** A. Distance **B. Displacement** ✓ C. Speed D. Velocity	**B. Displacement**	Displacement is the change in position of a body from its initial to its final point ($\Delta d = d_f - d_i$). Distance is the length of the path travelled.
2	**Motion of a screw of rotating fan is:** A. Circular motion B. Vibratory motion C. Random motion **D. Rotatory motion** ✓	**D. Rotatory motion**	The screw turns around the fixed axis of the fan, so its motion is rotatory (rotational). The blades of a fan are the textbook example of rotatory motion.
3	**A cyclist is travelling in a westward direction and produces a deceleration of 8 m/s² to stop. The direction of its acceleration is towards:** A. North **B. East** ✓ C. South D. West	**B. East**	Deceleration means the acceleration acts opposite to the velocity. The cyclist moves west, so the acceleration points east.
4	**A girl walks 3 km towards west and 4 km towards south. What is the magnitude of her total distance and displacement respectively?** A. 7 km, 7 km B. 1 km, 7 km C. 7 km, 1 km **D. 7 km, 5 km** ✓	**D. 7 km, 5 km**	Distance = 3 + 4 = 7 km (length of the path). Displacement is the straight line from start to end: $\sqrt{(3^2 + 4^2)} = \sqrt{25} = 5$ km.
5	**A rider is training a horse. Horse moves 60 metres towards right in 3 seconds. Then it turns back and travels 30 metres in 2 seconds. Find its average velocity?** **A. 6 m/s** ✓ B. 18 m/s C. 35 m/s D. zero	**A. 6 m/s**	Displacement = 60 − 30 = 30 m (to the right). Total time = 3 + 2 = 5 s. Average velocity = 30 ÷ 5 = 6 m/s.
6	**If a cyclist has acceleration of 2 m/s² for 5 seconds, the change in velocity of the cyclist is:** A. 2 m/s **B. 10 m/s** ✓ C. 20 m/s D. 15 m/s	**B. 10 m/s**	$a = \Delta v \div \Delta t$, so $\Delta v = a \times \Delta t = 2 \times 5 = 10$ m/s.

	Question and options	Answer	Why
7	**A car is moving with velocity of 10 m/s. If it has acceleration of 2 m/s² for 10 seconds. What is final velocity of the car?** **A. 30 m/s ✓** B. 20 m/s C. 10 m/s D. 15 m/s	**A. 30 m/s**	$\Delta v = a \times t = 2 \times 10 = 20$ m/s. Final velocity = 10 + 20 = 30 m/s.
8	**When the slope of a body's displacement-time graph increases, the body is moving with:** **A. increasing velocity ✓** B. decreasing velocity C. constant velocity D. all of these	**A. increasing velocity**	The slope (gradient) of a displacement–time graph gives velocity. If the slope keeps increasing, the velocity is increasing.
9	**A ball is thrown straight up, what is the magnitude of acceleration at the top of its path?** A. zero **B. 9.8 m/s² ✓** C. 4.9 m/s² D. 19.6 m/s²	**B. 9.8 m/s²**	At the top the velocity is momentarily zero, but gravity still acts. The acceleration stays g = 9.8 m/s² (directed downward) throughout the flight.
10	**Slope of distance-time graph is:** A. velocity B. acceleration **C. speed ✓** D. displacement	**C. speed**	Gradient = $\Delta s \div \Delta t$, which is the definition of speed (equation 2.7 in the chapter).
11	**Area under speed-time graph is equal to _____ of moving body:** **A. distance ✓** B. change in velocity C. uniform velocity D. acceleration	**A. distance**	Area under a speed–time graph (rectangle = v × t, triangle = ½ × v × t) gives the distance travelled. The slope gives acceleration.
12	**In 5 s a car accelerates so that its velocity increases by 20 m/s. The acceleration is:** A. 0.25 m/s² **B. 4 m/s² ✓** C. 25 m/s² D. 100 m/s²	**B. 4 m/s²**	$a = \Delta v \div \Delta t = 20 \div 5 = 4$ m/s².
13	**Ball dropped freely from a tower reaches ground in 4 s, the speed of impact of ball is:** A. 0 m/s B. 2.45 m/s C. 19.6 m/s **D. 39.2 m/s ✓**	**D. 39.2 m/s**	$v_f = v_i + g\,t = 0 + 9.8 \times 4 = 39.2$ m/s.
14	**Which of following distance time graphs represents increasing speed of a car? (Graphs A, B, C, D as shown in the book.)** A. Horizontal line (rest) B. Straight rising line (constant speed) **C. Curve bending upward (increasing speed) ✓** D. Curve bending downward (decreasing speed)	**C. Curve bending upward (increasing speed)**	Increasing speed means the slope of the distance–time graph keeps increasing, so the curve bends upward (graph C). A horizontal line is rest, a straight rising line is constant speed, and a curve bending downward is decreasing speed.