



GRADE - XI 31/07/2023	MT- 1 [2023-2024] PHYSICS	Max Marks - 20 TIME - 50 min
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Section A		
1	The dimensions of kinetic Energy is (a) $M^1L^1T^{-2}$ (b) $M^2L^2T^1$ (c) $M^1L^1T^2$ (d) $M^1L^2T^{-2}$	1
2	How many significant numbers in 600900 (a) 1 (b) 6 (c) 5 (d) 4	1
3	A particle is projected making an angle 60° with the horizontal, with k amount of kinetic energy. The kinetic Energy of the particle at the highest position is (a) 0 (b) $k/2$ (c) $k/4$ (d) k	1
4	Assertion and Reasoning: These questions consist of two statements, each printed as Assertion and Reason. While answering these questions, you are required to choose any one of the following four responses. Assertion : A body can have acceleration even if its velocity is zero at a given instant of time. Reason : A body is momentarily at rest when it reverses its direction of motion. A) If both assertion and reason are true and the reason is the correct explanation of the assertion. B) If both assertion and reason are true but reason is not the correct explanation of the assertion.	1

	C) If assertion is true but reason is false. D) If the assertion and reason both are false	
	Section B	
5	Check the correctness of the equation $p = h d g$. where p is pressure at a point h below the free surface of density of liquid d and acceleration due to gravity g	2
6	Draw position -time graphs for one object moving with negative velocity and at rest	2
	Section C	
7	A particle is projected with a velocity of 60 m/s at an angle of 30° with the horizontal. Calculate maximum height, time of flight and range covered by the particle.	3
	Section D	
8	For an angular projection given to a projectile find (1) maximum height (2) Time of flight (3) Horizontal range	5
	Section E	
9	<p>Case Study Based Question : Read the Case Study given below and answer the question that follow:</p> <p>When an object is in motion, its position changes with time. So, the quantity that describes how fast is the position changing w.r.t. time and in what direction is given by average velocity. It is defined as the change in position or displacement (Δx) divided by the time interval (Δt) in which that displacement occurs. However, the quantity used to describe the rate of motion over the actual path, is average speed. It defined as the total distance travelled by the object divided by the total time taken.</p>	1X4=4

(i) A 250 m long train is moving with a uniform velocity of 45 km/h. The time taken by the train to cross a bridge of length 750 m is

- (a) 56 s
- (b) 68 s
- (c) 80 s
- (d) 92 s

(ii) A truck requires 3 hr to complete a journey of 150 km. What is average speed?

- (a) 50 km/h
- (b) 25 km/h
- (c) 15 km/h
- (d) 10 km/h

(iii) Average speed of a car between points A and B is 20 m/s, between B and C is 15 m/s and between C and D is 10 m/s. What is the average speed between A and D, if the time taken in the mentioned sections is 20s, 10s and 5s, respectively?

- (a) 17.14 m/s
- (b) 15 m/s
- (c) 10 m/s
- (d) 45 m/s

(iv) A cyclist is moving on a circular track of radius 40 m completes half a revolution in 40 s. Its average velocity (in m/s) is

- (a) zero
- (b) 2
- (c) 4π
- (d) 8π