Indian School Al Wadi Al Kabir
Unit test (2025-2026)

Class: XI | Subject: Physics (042) | Max. marks: 30
Date: 15/05/2025 | SET- 1 | Time: 1 hour
MARKING SCHEME

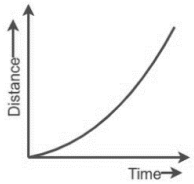
Section A

1	(d) the particle moves at a constant velocity up to a time t_0, and then stops.	
2	(c) Slope of the velocity – time graph	
3	(a) 125 m	
4	(a) a unit vector	
5	(b) $\vec{A} = \vec{C} + \vec{B}$	
6	(c) 8 unit	
7	(A) Both A and R are true and R is the correct explanation of A	
8	(A) Both A and R are true and R is NOT the correct explanation of A	

Section B

9	Rate of change in displacement By slope of tangent of v-t graph Or Distance = Area of both triangles = 2 x ½ x 5 x 20 = 100m. As displacement is zero, average velocity is zero.	1+1
10	Def. of unit velocity Finding magnitude, A = $\sqrt{A_x^2 + A_y^2 + A_z^2}$ unit vector = $\vec{A}$ /A= $\frac{Ax\,\hat{\imath} + Ay\,\hat{\jmath} + Az\,\hat{k}.}{\sqrt{A_x^2 + A_y^2 + A_z^2}}$	1 + ½ +1/2

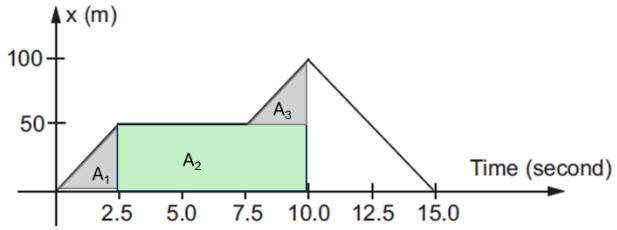
Section C

11	(i) any three differences (ii) Vave = $2v_1v_2/v_1 + v_2$ = 37.5 m/s	1.5 +1.5
12	Velocity=constant, acceleration = 0 	
13	Statement Diagram derivation	1+1/2+1+1/2

Section D

14 (i)	(a) always less than its magnitude	1
(ii)	(b) 58 J	1
(iii)	(d) 74 J	1
(IV)	(a) 0 J or (a) Force opposes motion	1

Section E

15	(i) Diagram Derivation (ii)  Distance = $A_1 + A_2 + A_3$ = 500 m Velocity = 500/10 = 50 m/s Or (i)Three graphs v-t graph-slope = acceleration v-t graph-area = distance (ii) v = u + at = 4 + 1.2 x 5 = 10 m/sec $v^2 = u^2 + 2ay,$ $0 = (4{\cdot}0\ \text{m/s})^2 + 2(-10\ \text{m/s}^2)y$ $y = \frac{16\ \text{m}^2/\text{s}^2}{20\ \text{m/s}^2} = 0{\cdot}80\ \text{m}.$ (iii)	3+1+1