

Exam sample for the first periodic exam

1. We can write the speed of light ($c = 299,000,000 \text{ m/s}$) using the **scientific notation as:**

- (a) 2.99×10^8 (b) 29.9×10^8 (c) 0.299×10^8 (d) 299×10^8

2. A car moving with a speed of **100 km/h**, what is its speed in **m/s**?

- (a) 27.8 m/s (b) 16.7 m/s (c) 277.8 m/s (d) 167.7 m/s

3. Suppose the motion of a particle is described by the equation: $\mathbf{X} = 20 + 4 \mathbf{t}^2$. Find the **average velocity** of the particle in the time interval $t_1=2 \text{ s}$ to $t_2=5 \text{ s}$?

- (a) 29 m/s (b) 28 m/s (c) 84 m/s (d) 10 m/s

4. The following are equations of the position of a particle, in which situation the **velocity of the particle is constant** ?

- (a) $x = 4 t^2 - 2$ (b) $x = -2 t^3$ (c) $x = -3 t - 2$ (d) $x = 4 t^{-2}$

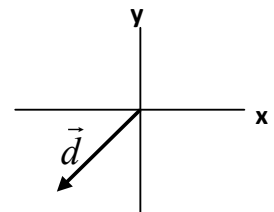
5. A ball thrown vertically upward with an initial velocity of **12 m/s**, what is the ball's **maximum height**?

- (a) 7.35 m (b) 14.7 m (c) 0.61 m (d) 1.22 m

6. A vector has two components ($\mathbf{A}_x = 3 \text{ cm}$ and $\mathbf{A}_y = -4 \text{ cm}$). What is the **magnitude of A**?

- (a) 4 cm (b) 5 cm (c) 1 cm (d) 7 cm

7. In the figure, what is the **signs of the x and y components of vector \vec{d}** ?



- (a) (+, +) (b) (+, -) (c) (-, -) (d) (-, +)

8. Given the two vectors $\vec{a} = 2\hat{i} + 3\hat{j} + 4\hat{k}$ and $\vec{b} = \hat{i} - 2\hat{j} + 3\hat{k}$, Find \vec{c} where $\vec{c} = \vec{a} + \vec{b}$?

- (a) $\vec{c} = 3\hat{i} + 5\hat{j} + 7\hat{k}$ (b) $\vec{c} = 3\hat{i} + \hat{j} + 7\hat{k}$ (c) $\vec{c} = \hat{i} + \hat{j} + 7\hat{k}$ (d) $\vec{c} = \hat{i} + 5\hat{j} + \hat{k}$

9. Two vectors : $\vec{A} = 2\hat{i} + 3\hat{j} + 4\hat{k}$ and $\vec{B} = \hat{i} - 2\hat{j} + 3\hat{k}$. Find $\vec{A} \cdot \vec{B}$?

(a) 5

(b) 15

(c) 20

(d) 8

10. Vector \vec{A} has a **magnitude of 6 units** and is in the **direction of positive x-axis**, vector \vec{B} has a **magnitude of 4 units** and making an angle of **30° with the positive x-axis**. What is the **magnitude of $\vec{A} \times \vec{B}$** ?

(a) 12 units

(b) 24 units

(c) 20.8 units

(d) 28 units