

General Physics I (0302101)
 First Exam

12

 20

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Constants: $g = 9.8 \text{ m/s}^2$

Answer Sheet

List your final answer in this table. Only the answer in this table will be graded.

	e	a	b	c	d	e	a	d	a	c
Question	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Answer	d	e	c	c	d	e	a	d	a	b

1. If vector \vec{B} is added to vector \vec{A} , the result is $6\hat{i} + \hat{j}$. If \vec{B} is subtracted from \vec{A} , the result is $-4\hat{i} + 7\hat{j}$. What is the magnitude of \vec{A} ?

- (a) 1.4 (b) 4.6 (c) 6.1 (d) 5.1 (e) 4.1

2. At $t = 0$, a particle leaves the origin with a velocity of 12 m/s in the positive x direction and moves in the xy plane with a constant acceleration of $(-2.0\hat{i} + 4.0\hat{j})\text{m/s}^2$. At the instant the y coordinate of the particle is 18 m, what is the x coordinate of the particle?

- (a) 27 m (b) zero (c) 23 m (d) 38 m (e) 48 m

3. Two forces are the only forces acting on a 3.0 kg object which moves with an acceleration of 3.0 m/s^2 in the positive y direction. If one of the forces acts in the positive x direction and has a magnitude of 8.0 N, what is the magnitude of the other force?

- (a) 14 N (b) 12 N (c) 11 N (d) 10 N (e) 16 N

4. Two vectors $\vec{A} = 6\hat{i} - 5\hat{j} + 3\hat{k}$ and $\vec{B} = 3\hat{i} - 8\hat{j}$. The scalar (Dot) product of these two vectors is:

- (a) 44 (b) 48 (c) 58 (d) 63 (e) 68

5. The position of a particle moving along the x axis is given by $x = (21 + 22t - 6.0t^2)$ m, where t is in s. What is the average velocity (in units of m/s) during the time interval $t = 1.0$ s to $t = 3.0$ s?

- (a) -14 (b) 8.0 (c) 14 (d) -2.0 (e) -8.0

6. Two vectors lying in the xz plane are given by the equations $\vec{A} = 2\hat{i} + 3\hat{k}$ and $\vec{B} = -\hat{i} + 2\hat{k}$. The value of $\vec{A} \times \vec{B}$ is:

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

7. A 1.8 kg block is released from rest at the top of a rough (خشنة) 30° inclined plane. As the block slides down the incline, its acceleration is 3.0 m/s^2 down the incline. Determine the magnitude of the force of friction acting on the block.

- (a) 3.4 N (b) 7.0 N (c) 5.2 N (d) 2.1 N (e) 1.2 N

8. Starting from rest, a car travels 1,350 meters in 1.00 minute. It accelerated at 1.0 m/s^2 until it reached its cruising speed (السرعة القصوى). Then it drove the remaining distance at constant velocity. What was its cruising speed (in units of m/s)?

- (a) 44 (b) 48 (c) 58 (d) 30 (e) 90

$v_i = 0$
زمن كمي
ازاحة كلية

9. A ball leaves the ground at an angle of 30° above the horizontal and at a speed of 10 m/s. What is the maximum height reached?

- (a) 1.3 m (b) 6.8 m (c) 7.9 m (d) 5.1 m (e) 2.9 m

10. A force accelerates a body of mass M . The same force applied to a second body produces nine times the acceleration. What is the mass of the second body?

- (a) $18M$ (b) $9M$ (c) $M/9$ (d) $2M/9$ (e) $2M$