# Mutah University-Physics Department <br> Medical Physics 100-Mid Exam 

## رقم التسلسل:

Note: $g=10 \mathrm{~m} / \mathrm{s}^{2}$

12345678910
badccbdcad

1. If $x$ and $t$ represent position and time, respectively, the dimension of $A$ in $x(t)=A t+B t^{2}$ must be
a) $L / T^{2}$
b) $\mathrm{L} / \mathrm{T}$
c) $\mathrm{LT}^{2}$
d)

LT
a) 9.9
b) 12.5
c) 8.1
d)
5.7
3. A car travels 40 Km at an average speed of $80 \mathrm{~km} / \mathrm{h}$ and then travels 40 Km at an average speed of $40 \mathrm{~km} / \mathrm{h}$. The average speed of the car for this $80-\mathrm{km}$ trip is:
a) $50 \mathrm{~km} / \mathrm{h}$
b) $68.8 \mathrm{~km} / \mathrm{h}$
c) 48.7
$\mathrm{km} / \mathrm{h}$
d) $53.3 \mathrm{~km} / \mathrm{h}$
4. A ball is thrown directly downward with an initial velocity of $5 \mathrm{~m} / \mathrm{s}$ from a height of 30 m , when does the ball strike the ground?
a) 5 s
b) 4 s
c) 2

S
d) 3 s
5. A particle goes from $x=-2 m, y=3 m$, to $x=3 m, y=-2 m$. Its vector displacement is
a) $\hat{x}+2 \hat{y}$
b) $5 \hat{x}-4 \hat{y}$
c) $5 \hat{x}-5 \hat{y}$
d)

$$
-\hat{x}-2 \hat{y}
$$

6. A man of mass 72 kg climb a hill of height 60 m in 6 minutes. what is the power he delivered by him?
a) 155 W
b) 120 W
c) 187 W
d) 133

W
7. An airplane flies horizontally with speed of $300 \mathrm{~m} / \mathrm{s}$ at an altitude of 500 m . What horizontal distance from a target must the pilot release a bomb so as to hit the target?
a) 2700 m
b) 2400 m
c) 3300 m
d)

3000 m
8. An object moves along the $x$-coordinate according to the equation $x(t)=\left(3-4 t^{2}\right)$ m . The average velocity between $\mathrm{t}=1$ and $\mathrm{t}=2 \mathrm{~s}$ is
a) $8 \mathrm{~m} / \mathrm{s}$
b) $12 \mathrm{~m} / \mathrm{s}$
c) $-12 \mathrm{~m} / \mathrm{s}$
d) 16
m/s
9. A particle is traveling at a speed of $4 \mathrm{~m} / \mathrm{s}$ and comes to rest after undergoing a constant negative acceleration for 40 m . How long does it take the particle to come to rest?
a) 20 s
b) 8 s
c) 5
s
d) 10 s
10. A woman pushes a toy car initially at rest by exerting a constant horizontal force of magnitude 5 N , the car moves 1 m . If the mass of the car is 0.2 kg . What is its final speed?
a) $5 \mathrm{~m} / \mathrm{s}$
b) $5.8 \mathrm{~m} / \mathrm{s}$
c) $4.5 \mathrm{~m} / \mathrm{s}$
d) 7.1
m/s

# Mu'tah University-Physics Department <br> Medical Physics 100-First Exam 

## رقم التسلسـل:



الشعبـة:
Note: $g=10 \mathrm{~m} / \mathrm{s}^{2}$

| $\mathbf{1}$ | $\mathbf{3}$ | $\mathbf{4}$ | $\mathbf{5}$ | $\mathbf{6}$ | 7 | 8 | 9 | 10 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| a | a | c | d | c | c | b | c | a |

1. if x and t represent distance and time, respectively, the c in the relation $\mathrm{x}=1 / 2 \mathrm{ct}^{2}$ must have the dimension
a) $L / T^{2}$
b) $M L / T^{2}$
c) $\mathrm{L} / \mathrm{T}$
d)
$\mathrm{L} / \mathrm{T}^{3}$

a) 9.9
b) 12.5
c) 8.1
d) 5.7
2. Starting from one oasis, a camel walks 25 km in a direction $30^{\circ}$ south of west and then walks 30 km toward the north to a second oasis. What distance separates the two oases?
a) 18.3 km
b) 15 km
c) 27.8 km
d)
53.6 km
3. A car travels 40 Km at an average speed of $80 \mathrm{~km} / \mathrm{h}$ and then travels 40 Km at an average speed of $40 \mathrm{~km} / \mathrm{h}$. The average speed of the car for this $80-\mathrm{km}$ trip is:
a) $50 \mathrm{~km} / \mathrm{h}$
b) $68.8 \mathrm{~km} / \mathrm{h}$
c) $48.7 \mathrm{~km} / \mathrm{h}$
d) 53.3
km/h
4. An automobile moving along a straight track changes its velocity from $40 \mathrm{~m} / \mathrm{s}$ to $80 \mathrm{~m} / \mathrm{s}$ in a distance of 200 m . What is the (constant) acceleration of the vehicle during this time?
a) $24 \mathrm{~m} / \mathrm{s}^{2}$
b) $18 \mathrm{~m} / \mathrm{s}^{2}$
c) $12 \mathrm{~m} / \mathrm{s}^{2}$
d) 6
$\mathrm{m} / \mathrm{s}^{2}$
5. A ball is thrown directly downward with an initial velocity of $5 \mathrm{~m} / \mathrm{s}$ from a height of 30 m , when does the ball strike the ground?
a) 5 s
b) 4 s
c) 2 s
d) 3 s

A Particle starts from the origin at $\mathrm{t}=0$ with a velocity of $3 \mathbf{j}$ and moves in the xy .7
a) 40 m
b) 12 m
c) 36 m
d) 24 m
8. A particle goes from $x=-2 m, y=3 m$, to $x=3 m, y=-2 m$. Its vector displacement is
a) $\boldsymbol{i}+2 \boldsymbol{j}$
b) $5 i-4 j$
c) $5 i-5 j$
d) $\boldsymbol{i}-2 \boldsymbol{j}$
9. An object moving at a constant speed requires 3.14 s to go once a round a circle with radius of 1.5 m , what is the centripetal acceleration of the particle during this time?
a) $6 \mathrm{~m} / \mathrm{s}^{2}$
b) $2 \mathrm{~m} / \mathrm{s}^{2}$
c) $4 \mathrm{~m} / \mathrm{s}^{2}$
d) $8 \mathrm{~m} / \mathrm{s}^{2}$
10. A stone is thrown from the top of a hill with initial velocity of $20 \mathrm{~m} / \mathrm{s}$ at an angle of $37^{\circ}$. If it reaches the ground after 3 s . The height of the hill is,
a) 32 m
b) 36 m
c) 9 m
d) 45 m .

# Mu'tah University-Physics Department Physics 100-First Exam 

الإسم: رقم التسلسل: ( )
Note: $g=10 \mathrm{~m} / \mathrm{s}^{2}$


1. A force of 1 N is equal to
a) $1 \mathrm{~kg} \cdot \mathrm{~m} / \mathrm{s}^{2}$
b) $1 \mathrm{~kg} \cdot \mathrm{~m} / \mathrm{s}$
c) $1 \mathrm{~kg} / \mathrm{s}$
d) 1
$\mathrm{kg} . \mathrm{m}^{2} / \mathrm{s}$
2. Given $\stackrel{\dot{A}}{A}=-2 \hat{x}+\hat{y}$ and $\stackrel{\dot{E}}{B=2}=2 \hat{x}-4 \hat{y}$, the magnitude of $\dot{A}+\frac{1}{B}$ is
(a) 12
(b) -2
(c) 5
(d) 3
3. A person walks $12 \mathrm{~m}, 60^{\circ}$ north of east, and then walks $12 \mathrm{~m}, 60^{\circ}$ north of west, the magnitude and direction of the resultant displacement is
(a) $20.8 \mathrm{~m}, 90^{\circ}$
(b) $12 \mathrm{~m}, 120^{\circ}$
(c) $20.8 \mathrm{~m}, 60^{\circ}$
(d) $12 \mathrm{~m},-30^{\circ}$
4. The velocity of a particle moving along the x axis is given by $v(\mathrm{t})=4+12 t-3 t^{2}$, what is the average acceleration of the particle during the time interval $t=0$ to $t=2 \mathrm{~s}$.
(a) $16 \mathrm{~m} / \mathrm{s}^{2}$
(b) $6 \mathrm{~m} / \mathrm{s}^{2}$
(c) $12 \mathrm{~m} / \mathrm{s}^{2}$
(d) $40 \mathrm{~m} / \mathrm{s}^{2}$
5. An object moved in one dimension with velocity $5 \mathrm{~m} / \mathrm{s}$ for 60 s , then with $10 \mathrm{~m} / \mathrm{s}$ for 90 s , and finally with $-10 \mathrm{~m} / \mathrm{s}$ for 60 s . The average speed of the object during the whole trip is:
(a) zero
(b) $2.9 \mathrm{~m} / \mathrm{s}$
(c) $6 \mathrm{~m} / \mathrm{s}$
(d) 8.6
m/s
6. An object was dropped from the window of a tall building hit the ground in 4 s . The height of the window above the ground is
(a) 245 m
(b) 80 m
(c) 180 m
(d) 320 m
7. A stone is thrown from the top of a hill with initial velocity of $20 \mathrm{~m} / \mathrm{s}$ at an angle of $37^{0}$. If it reaches the ground after 4 s , the height of the hill is
(a) 40 m
(b) 80 m
(c) 16 m
(d) 32 m
8. At $\mathrm{t}=0$, a particle leaves the origin with a velocity $\stackrel{\rightharpoonup}{v_{0}}=16 \hat{y} \mathrm{~m} / \mathrm{s}$. Its acceleration is given by $\hat{t^{\prime}}=(3 \hat{x}-4 \hat{y}) \mathrm{m} / \mathrm{s}^{2}$. What is the time the particle takes to reach the maximum y coordinate
(a) 4 s
(b) 6 s
(c) 2 s
(d) 3 s
9. If the only forces acting on a $2.0-\mathrm{kg}$ mass are ${ }^{\frac{1!}{F_{1}}=(3 \hat{x}-3 \hat{y})} \mathrm{N}$ and ${ }_{2}{ }_{2}=(5 \hat{x}+3 \hat{y}) \mathrm{N}$, what is the magnitude of the acceleration of the particle?
a) $4 \mathrm{~m} / \mathrm{s}^{2}$
b) $6 \mathrm{~m} / \mathrm{s}^{2}$
c) $4.7 \mathrm{~m} / \mathrm{s}^{2}$
d) $9.4 \mathrm{~m} / \mathrm{s}^{2}$
10. The apparent weight of a fish in an elevator is greatest when the elevator
a) moves downward at constant velocity
b) moves upward at constant velocity.
c) accelerates upward.
d) accelerates downward

## A <br> Mu'tah University/Physics Department Medical Physics 100/ Mid Exam

## رقم التسلسل:

الاسم:
المدرس:

Note: $g=10 \mathrm{~m} / \mathrm{s}^{2}$

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| b | d | d | b | d | a | c |
| 8 | 9 | 10 | 11 | 12 | 13 |  |
| c | d | a | d | b | d |  |

1. If $x$ and $t$ represent position and time, respectively, the dimension of $A$ in $x(t)=A t+B t^{2}+\frac{C}{t}+\frac{D}{t^{2}}$ must be
(a) $\mathrm{L} / \mathrm{T}^{2}$
(b) $\mathrm{L} / \mathrm{T}$
(c) $\mathrm{LT}^{2}$
(d) LT


(a) $233{ }^{\circ}$
(b) $323^{\circ}$
(c) $37^{\circ}$
(d) $143^{\circ}$
2. Starting from on oasis (واحة), a camel walks 25 km in direction $30^{\circ}$ south of west and then walks 30 km towards the north to second oasis. What distance separates the two oasis?
(a) 48 km
(b) 53 km
(c) 15 km
(d) 28 km
3. An object moves along the $x$-axis according to the equation $x(t)=\left(20 t-6 t^{2}-4 t^{3}\right)$ m . What is the speed ( $\mathrm{in} \mathrm{m} / \mathrm{s}$ ) of the object at $t=1 \mathrm{~s}$ ?
(a) 52
(b) 4
(c) -4
(d) -52
4. A particle travels in the positive $x$ direction with a constant velocity of $4 \mathrm{~m} / \mathrm{s}$. It
then accelerates uniformly at $2 \mathrm{~m} / \mathrm{s}^{2}$ in a time interval of 5 s . What is its average velocity (in $\mathrm{m} / \mathrm{s}$ ) during that time interval?
(a) 4
(b) 14
(c) 2
(d) 9
5. A particle is traveling at a speed of $4 \mathrm{~m} / \mathrm{s}$ and comes to rest after undergoing a constant negative acceleration for 40 m . How long (in s) does it take the particle to come to rest?
(a) 20
(b) 8
(c) 5
(d) 10
6. A ball is thrown vertically upward from the ground with an initial speed of $3 \mathrm{~m} / \mathrm{s}$. How long (in s) does it take the ball to reach its maximum height?
(a) 0.7
(b) 0.9
(c) 0.3
(d) 0.5
 object. What is the acceleration of the object (in $\mathrm{m} / \mathrm{s}^{2}$ ).
(a) 4
(b) 7
(c) 10
(d) 5
7. A 2 kg object is moving along x -axis. What is the work done in $(\mathrm{J})$ in changing its velocity from $4 \mathrm{~m} / \mathrm{s}$ to $6 \mathrm{~m} / \mathrm{s}$ ?
(a) 16
(b) 48
(c) 32
(d) 20
8. At $t=0$ a particle leaves the origin with a velocity of $5.0 \mathrm{~m} / \mathrm{s}$ in the positive y direction. Its acceleration is given by $\stackrel{l ? l}{?=} 3 \hat{i}-2 \hat{j} \mathrm{~m} / \mathrm{s}^{2}$. At the instant the particle reaches its maximum y coordinate how far is the particle to the origin?
(a) 11 m
(b) 16 m
(c) 22 m
(d) 29 m
9. An airplane flies horizontally with speed of $300 \mathrm{~m} / \mathrm{s}$ at an altitude of 500 m . What horizontal distance from a target must the pilot release a bomb so as to hit the target?
(a) 2.7 km
(b) 2.4 km
(c) 3.3 km
(d) 3.0 km
10. A man of mass 72 kg climb (يتسلق) a hill (تلة) of height 60 m in 6 minutes. what is the power he delivered by him?
(a) 155 W
(b) 120 W
(c) 187 W
(d) 133

W
13. A woman pushes (تدفع) a toy car initially at rest by exerting (تؤثر) ) a constant horizontal force of magnitude 5 N , the car moves 1 m . If the mass of the car is
0.2 kg . What is its final speed?
(a) $5 \mathrm{~m} / \mathrm{s}$
(b) $5.8 \mathrm{~m} / \mathrm{s}$
(c) $4.5 \mathrm{~m} / \mathrm{s}$
(d) $7.1 \mathrm{~m} / \mathrm{s}$

# Mu'tah University/Physics Department <br> Medical Physics 100/ Mid Exam 

المدرس:

رقم التسلسل:
الاسم:

Note: $g=10 \mathrm{~m} / \mathrm{s}^{2}$

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| b | d | d | b | d | a | c |
| 8 | 9 | 10 | 11 | 12 | 13 |  |
| c | d | a | d | b | d |  |

1. If $x$ and $t$ represent position and time, respectively, the dimension of A in must be
(a) $\mathrm{L} / \mathrm{T}^{2}$
(b) $\mathrm{L} / \mathrm{T}$
(c) $\mathrm{LT}^{2}$
(d) LT
2. If, and, what is the angle that the vector makes with the positive $x$-axis?
(a) $233^{\circ}$
(b) $323^{\circ}$
(c) $37^{\circ}$
(d) $143^{\circ}$
3. Starting from on oasis (واحة), a camel walks 28 km in direction $30^{\circ}$ south of west and then walks 28 km towards the north to second oasis. What distance separates the two oasis?
(a) 48 km
(b) 53 km
(c) 15 km
(d) 28 km
4. An object moves along the $x$-axis according to the equation m . What is the speed (in $\mathrm{m} / \mathrm{s}$ ) of the object at $t=1 \mathrm{~s}$ ?
(a) 52
(b) 4
(c) -4
(d) -52
5. A particle travels in the positive $x$ direction with a constant velocity of $4 \mathrm{~m} / \mathrm{s}$. It then accelerates uniformly at $2 \mathrm{~m} / \mathrm{s}^{2}$ in a time interval of 5 s . What is its average velocity (in $\mathrm{m} / \mathrm{s}$ ) during that time interval?
(a) 4
(b) 14
(c) 2
(d) 9
6. A particle is traveling at a speed of $4 \mathrm{~m} / \mathrm{s}$ and comes to rest after undergoing a constant negative acceleration for 40 m . How long (in s) does it take the particle to come to
rest?
(a) 20
(b) 8
(c) 5
(d)
7. A ball is thrown vertically upward from the ground with an initial speed of $3 \mathrm{~m} / \mathrm{s}$. How long (in s) does it take the ball to reach its maximum height?
(a) 0.7
(b) 0.9
(c)
0.3
(d) 0.5
8. The two forces and are the only forces acting on a 1 kg object. What is the acceleration of the object (in $\mathrm{m} / \mathrm{s}^{2}$ ).
(a) 4
(b) 7
(c)

10
(d) 5
9. A 2 kg object is moving along x -axis. What is the work done in $(\mathrm{J})$ in changing its velocity from $4 \mathrm{~m} / \mathrm{s}$ to $6 \mathrm{~m} / \mathrm{s}$ ?
(a) 16
(b) 48
(c) 32
(d)

20
10. A 10 kg block is released from rest 10 m above the ground. When it has reached the ground its kinetic energy (in J) is:
a) 1000
b) 4000
c) 1200
d) 2200
11. An airplane flies horizontally with speed of $300 \mathrm{~m} / \mathrm{s}$ at an altitude of 500 m . What horizontal distance from a target must the pilot release a bomb so as to hit the target?
(a) 2.7 km
(b) 2.4 km
(c) 3.3 km
(d) 3.0 km
12. A man of mass 72 kg climb (تسلق) a hill (تلة) of height 60 m in 6 minutes. What is the power he delivered by him?
(a) 155 W
(b) 120 W
(c) 187 W
(d) 133 W
13. A woman pushes (تدفع) a toy car initially at rest by exerting (تؤثر) a constant horizontal force of magnitude 5 N , the car moves 1 m . If the mass of the car is 0.2 kg . What is its final speed?
(a) $5 \mathrm{~m} / \mathrm{s}$
(b) $5.8 \mathrm{~m} / \mathrm{s}$
(c) $4.5 \mathrm{~m} / \mathrm{s}$
(d) $7.1 \mathrm{~m} / \mathrm{s}$

