2024

GIFT

EL-MOASSER

PHYSICS



Final **Exams**

of some educational administrations

1st SEC.

FIRST TERM

Final Exam 1

Cairo Governorate
«Hadayek al-Qubbah Educational Administration»

First: Choose the correct answer (1 : 14) :

1 The derived physical quantity from the following is ..... .

(a) length (b) energy (c) time (d) mass

2 Pressure is a physical quantity that equals (Force/Area), so its dimensional formula is ..... .

(a) $M.L.T^{-2}$ (b) $M.L^{-2}.T^{-1}$ (c) $M.L^{-1}.T^{-2}$ (d) $M.L^{-2}.T^{-2}$

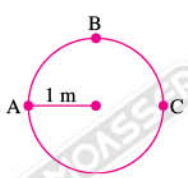
3 The length of a tube was found to be (5 ± 0.1) m, then the relative error in measuring this length is ..... .

(a) 0.01 (b) 0.02 (c) 0.1 (d) 0.2

4 A body has a mass of 40 gm, then its mass in the metric system is ..... .

(a) 40×10^{-3} kg (b) 0.004 kg (c) 0.4 kg (d) 40×10^{3} kg

5 An object moves along the circumference of a circle taking path ABC as in the figure, so the displacement equals ..... .



(a) 1 m (b) 2 m

(c) π m (d) 4 m

6 The scalar product equals the magnitude of the vector product of two vectors when the angle between the two vectors = ...

(a) Zero (b) 30° (c) 45° (d) 60°

7 An object is affected by two forces, the first is 30 N to the south and the other is 20 N to the north, then their resultant = ...

(a) 10 N to the south (b) 50 N to the south

(c) 10 N to the north (d) 60 N to the north

8 From the examples of periodic motion is the motion of a ..... .

(a) train (b) plane (c) bike (d) swing

9 A square has a side length (4 ± 0.1) cm , the absolute error in measuring its area is ..... .

ⓐ $0.1\ cm^2$ ⓑ $0.2\ cm^2$ ⓒ $0.4\ cm^2$ ⓓ $0.8\ cm^2$

10 An object is thrown upward, then it returns back to its original position after 6 sec, so its initial velocity is ..... . $(g = 10\ m/s^2)$

ⓐ 10 m/s ⓑ 20 m/s ⓒ 30 m/s ⓓ 40 m/s

11 The property of an object to resist the change of its state is called ..... .

ⓐ acceleration ⓑ inertia

ⓒ reaction ⓓ static equilibrium

12 A car is moving on a straight horizontal road where the pushing force of the wheels with the ground is equal to the friction of the road, so the car ..... .

ⓐ has stopped ⓑ speed increases

ⓒ speed decreases ⓓ speed does not change

13 A driver saw the red traffic light at 120 m away from him, when he was moving with 32 m/s, so if he used the brakes to decelerate at $4\ m/s^2$, the car would stop after time ..... .

ⓐ 2 sec ⓑ 4 sec ⓒ 6 sec ⓓ 8 sec

14 A ship moves towards north with velocity 16 m/s but sea water moves towards west with velocity 12 m/s, then the resultant velocity of the ship equals ..... .

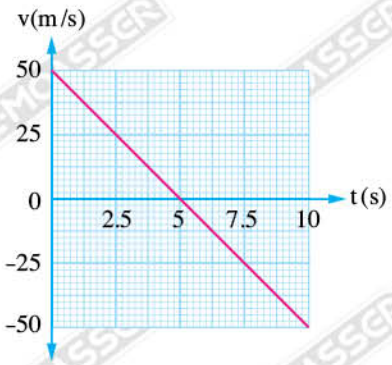
ⓐ 14 m/s ⓑ 20 m/s ⓒ 24 m/s ⓓ 28 m/s

Second: Answer the following questions (15, 16) :

15 Pressure is a scalar derived physical quantity. **Explain** ?

16 The opposite graph represents the relation between the velocity of an object projected upwards and the time.

Find : the maximum height reached by the object ($g = 10\ m/s^2$)



Final Exam 2

Cairo Governorate
«Al-Zaytoun Educational Administration»

First: Choose the correct answer (1 : 14) :

1 If the measuring unit of a physical quantity is kg/m.s, then its dimensional formula is ..... .

(a) MLT (b) $ML^{-1}T^{-1}$ (c) $ML^{-1}T^{-2}$ (d) MLT^{2}

2 An object moves along the circumference of a circle of radius (r), so the magnitude of its displacement during two revolutions is ..... .

(a) zero (b) r (c) 2 r (d) $2\pi r$

3 The final velocity of an object that has started its motion from rest will numerically equal its acceleration when ..... .

(a) its mass is 1 kg (b) it moves 1 m
(c) it moves for 1 s (d) no enough information

4 An apple fall down freely, it takes 1 s to reach the ground. Then its average velocity during its fall is ..... . (given : $g = 10\ m/s^2$)

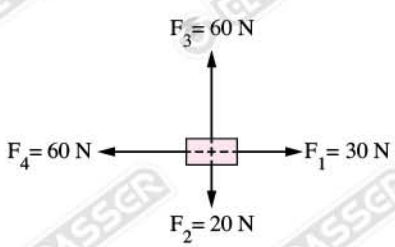
(a) 1 m/s (b) 3 m/s (c) 5 m/s (d) 7 m/s

5 If both the direction of velocity and acceleration are negative, so the speed ..... .

(a) increases (b) decreases
(c) is constant (d) is zero

6 **In the opposite figure :**
Four forces act on a body, so the magnitude of their resultant is ..... .

(a) 170 N (b) 90 N
(c) 80 N (d) 50 N



EXAM 2

7 An object that starts its motion from rest with uniform acceleration in a straight line covers a distance (d) in time (t), then after (2t) it will cover a distance ..... .

(a) d (b) 2 d (c) 4 d (d) $\sqrt{2}$ d

8 If the radius of the hydrogen atom is 0.053 nm, then it is equivalent to ..... .

(a) 0.53×10^{-10} m (b) 5.3×10^{-11} m (c) 53×10^{-12} m (d) all the previous

9 When the velocity of a ship that was moving in a straight line has increased uniformly from 20 m/s to 30 m/s while covering a distance of 200 m , then the time taken through this distance is ..... .

(a) 24 s (b) 16 s (c) 8 s (d) 4 s

10 If the angle between the two vectors X , Y is 44° , then the ratio between the magnitude of their vector product and their scalar product is ..... .

(a) greater than 1 (b) less than 1

(c) equal to 1 (d) no enough information

11 A truck of mass 10^4 kg hits a car of mass 10^3 kg. If the force that acts on the car by the truck during the collision is (F) , then the force that acts on the truck by the car is ..... .

(a) 0.1 F (b) – 0.1 F (c) F (d) – F

12 A car that was moving with a velocity 56 km/h took a distance 12 m to stop, so a distance of ..... will be needed to stop the same car in case it gets moving by 113 km/h. Assuming that the car moves by the same acceleration in the two cases.

(a) 97.7 m (b) 49.2 m (c) 48.9 m (d) 24.4 m

13 An object starts its motion from rest with uniform acceleration (a) in straight line, so its average velocity after time (t) is ..... .

(a) at (b) 2 at (c) $\frac{at}{2}$ (d) $\frac{a}{t}$

14 If a ball is projected upward by a velocity (v) to reach a maximum height (h) after time (t), then it is projected upward by velocity (2 v), so it will reach a maximum height ..... .

(a) $\sqrt{2}$ h (b) 2 h (c) 4 h (d) 16 h

Second: Answer the following questions (15 : 17) :

15 **Give reason :** The Newton's first law is known as the law of inertia?

16 **Explain why the following situation is impossible :**
"An object starts its motion from rest with uniform acceleration in a straight line to cover a distance 50 m in 10 s to reach a final velocity of 8 m/s" ?

17 A car is moving by 10 m/s; the driver applies the brakes to let the car move by uniform acceleration of 2 m/s^2 till it stops.
Find : (a) Time taken to stop **(b)** The distance covered to stop

Final Exam 3

Cairo Governorate
«Al-Khalifa & El Mokattam Directorate»

First: Choose the correct answer (1 : 14) :

1 A ball has diameter 20 mm, then its diameter equals ..... .

(a) 200 cm (b) 2 m (c) 20000 μm (d) 2000 nm

2 A physical quantity (X) = Force/mass, then (X) was derived from ..... .

(a) mass, length and time (b) length and time

(c) mass and length (d) mass only

3 All of these are vector quantities **except** ..... .

(a) work (b) force (c) velocity (d) acceleration

4 For two perpendicular vectors A and B which choice is equal to zero ?

(a) $A + B$ (b) $A - B$ (c) $A \wedge B$ (d) $A \cdot B$

5 A car starts from rest with uniform acceleration for 10 s to cover 100 m , then the distance covered by it after 20 s from the start of its motion is ..... .

(a) 200 m (b) 400 m (c) 800 m (d) 300 m

6 If an object starts from rest with uniform acceleration and takes time equal to the magnitude of its acceleration to reach a final velocity 9 m/s, so its acceleration = ...

(a) $3\ m/s^2$ (b) zero (c) $18\ m/s^2$ (d) $4\ m/s^2$

7 An object is projected vertically upwards from the ground surface with initial velocity 60 m/s , then the height of the object when it reaches a velocity 20 m/s is ..... .
($g = 10\ m/s^2$)

(a) 200 m (b) 160 m (c) 80 m (d) 320 m

8 Launching a rocket is based on ..... .

(a) Newton first law (b) Newton second law

(c) Newton third law (d) general gravitational law

9 A car is moving on a road with a uniform velocity of 20 m/s and it is affected by frictional force of 2000 N, so the force of the car engine is ..... .

(a) 1500 N (b) 2000 N (c) 20000 N (d) 100 N

10 When an object falls freely, its ..... increases from point to another.

(a) mass (b) density (c) acceleration (d) velocity

11 If the range of a body trajectory equals the double of its maximum height, then the angle of projection equals ..... .

(a) 45° (b) 30° (c) 63.4° (d) 26.5°

12 The relative error in measuring the area of a house is 0.04 where the real value of the area is 200 m^2, then the absolute error in this area ..... .

(a) 8 m^2 (b) 1.8 m^2 (c) 16 m^2 (d) 0.4 m^2

13 The tool that is used to measure a finite interval of the time taken by a body to fall from the top of a building is ..... .

(a) hourglass (b) stopwatch

(c) digital watch (d) pendulum clock

14 When a bus moves suddenly from rest in the forward direction, the passenger gets thrown ..... .

(a) forward (b) to the right (c) to the left (d) backward

Second: Answer the following questions (15, 16) :

15 A cube of side length 10 cm and the relative error in measuring length is 0.01, **find** the absolute error in measuring its volume.

16 A car is moving in a straight line to cover 300 m in a minute **find** the average velocity.

Final Exam 4

Alexandria Governorate
«El-Agamy Directorate»

First: Choose the correct answer (1 : 14) :

1 An object is considered in equilibrium when ..... .

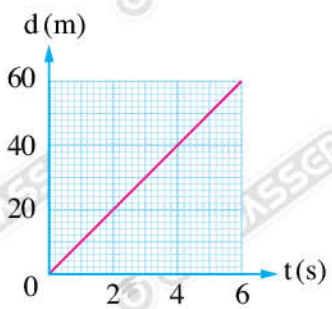
(a) The net force acting on it is more than zero

(b) The object moves with a constant acceleration

(c) The object moves in a straight line with a constant velocity

(d) The net force acting on it is less than zero

2 The opposite graph represents the relation between displacement covered by a body that moves in a straight line and time, so the magnitude of the object's velocity is ..... .



(a) 5 m/s (b) 10 m/s

(c) 20 m/s (d) 40 m/s

3 A body moves along the circumference of a circle, when it completes half a cycle, its displacement becomes (πX) , so the total distance covered by the object = ...

(a) $2X\pi^2$ (b) $2X$ (c) $\frac{1}{2}X\pi^2$ (d) πX

4 Which one of the following statements describes the projectiles motion correctly ?

(a) Its horizontal velocity is variable and its vertical acceleration is constant.

(b) Its horizontal velocity is variable and its vertical acceleration is variable.

(c) Its horizontal velocity is constant and its vertical acceleration is constant.

(d) Its horizontal velocity is constant and its vertical acceleration is variable.

5 A car moves with uniform velocity of (2 ± 0.01) m/s, so the displacement covered by the car during a period of time of (25 ± 2) s is ..... m

(a) 50 ± 0.085 (b) 50 ± 4.25

(c) 50 ± 0.02 (d) 50 ± 2.01

6 A microbus driver wants to close the sliding door of his car without needing the assistance of any of the passengers, so ..... .

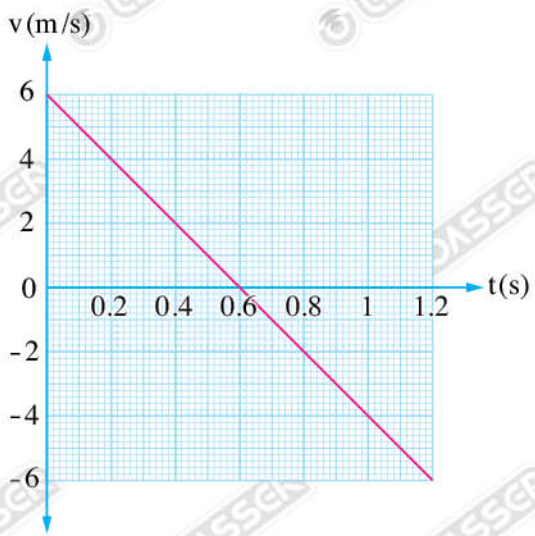
(a) he moves the car with a constant speed
(b) he speeds off and then stops suddenly
(c) he speeds off and then keeps moving
(d) he turns the car left

7 Which of the following quantities has the smallest mass ?

(a) 0.043 mg (b) 0.043 g (c) 430 µg (d) 0.00043 kg

8 The opposite graph represents the relation of the velocity of a body that is projected upwards vertically from the ground versus time, so the displacement covered by the body from the point of projection during 1.2 seconds = ...

(a) 3.7 m
(b) Zero
(c) 7.2 m
(d) 1.8 m

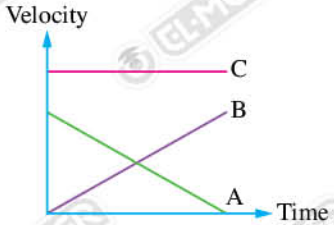


9 Knowing that the mass of the Earth is equal to 81 of the mass of the Moon, so the ratio between the attraction force that acts on the Earth by the moon to the attraction force that acts on the moon by the Earth is ..... .

(a) $\frac{1}{81}$ (b) $\frac{1}{1}$ (c) $\frac{81}{1}$ (d) $\frac{9}{1}$

10 The opposite graph represents the relation of velocity versus time for three objects during a certain period of time, which one of them is not affected by a resultant force during such time period ?

(a) Object (A) (b) Object (B)
(c) Object (C) (d) Both (A) and (B)

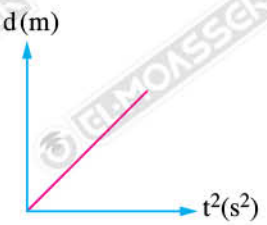


EXAM **4**

11 A building consists of four floors separated by equal distances. If an object (A) falls from the first floor and an object (B) falls from the fourth floor, the ratio between the time it takes for object (B) to reach the surface of the ground to the time it takes for object (A) to reach the ground surface is ..... . (neglecting air resistance)

ⓐ $\frac{4}{1}$ ⓑ $\frac{1}{1}$ ⓒ $\frac{1}{2}$ ⓓ $\frac{2}{1}$

12 The slope of the straight line represented by the opposite graph is equal to ..... .



ⓐ a^2 ⓑ 2 a

ⓒ $\sqrt{a}$ ⓓ 0.5 a

13 A body moves in a straight line with a uniform acceleration according to the relation : $t = \sqrt{\frac{3\,d}{7}}$ where (t) is measured in seconds and (d) is measured in meters , so the average velocity of the body during the interval between (t = 4 s) and (t = 9 s) is ..... .

ⓐ 37.3 m/s ⓑ 30.3 m/s ⓒ 47.3 m/s ⓓ 5.6 m/s

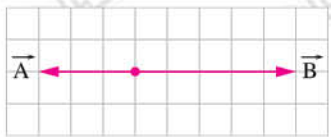
14 A physical quantity is measured in (kg/m.s) unit , so its dimensional formula is ..... .

ⓐ $M^{-1}L^{1}T^{0}$ ⓑ $M^{1}L^{-1}T^{1}$ ⓒ $M^{0}L^{-1}T^{-1}$ ⓓ $M^{1}L^{-1}T^{-1}$

Second: Answer the following questions (15, 16) :

15 A car driver uses the brakes of the car to change its velocity from 80 km/h to 68 km/h during covering a displacement of 400 m, assuming that the car moves with a uniform acceleration, **find** the displacement covered by the car from the instant of applying the brakes till it stops.

16 The figure represents two vectors $(\vec{A})$ and $(\vec{B})$, and the side length of each square in the grid shown below is 1 cm. **Calculate** the value of $(\vec{A} \cdot \vec{B})$



Final Exam 5

Menofia Governorate
«Menouf Educational Administration»

First: Choose the correct answer (1 : 14) :

1. The average speed is ..... quantity.
   (a) vector (b) scalar vector (c) displacement (d) scalar

2. When a car moves in positive direction and its acceleration is positive, then the velocity of the car ..... .
   (a) equals zero (b) increases
   (c) decreases (d) no correct answer

3. An object moves by uniform velocity 10 m/s for 5 s , then its acceleration is ..... .
   (a) 2 m/s^2 (b) – 2 m/s^2 (c) 0 (d) 50 m/s^2

4. The measuring unit of the amount of matter in the international system is ..... .
   (a) mole (b) meter (c) standard meter (d) kelvin

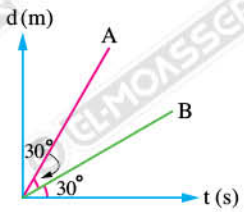
5. The scalar product of two vectors equals to the magnitude of their vector product when the angle between the two vectors is ..... .
   (a) 30° (b) 60° (c) 45° (d) 90°

6. For measuring the density of liquid directly, ... is used.
   (a) micrometer (b) ruler (c) hydrometer (d) stopwatch

7. The dimensional formula MLT^{-2} is for the physical quantity that has measuring unit ..... .
   (a) m^3 (b) J (c) N (d) kg.m/s

8. The alloy of platinum and iridium is used in making standard meter as it is ..... .
   (a) very elastic
   (b) reacting with the surrounding medium
   (c) rigid and chemically inactive
   (d) weak

9 In the opposite figure, the displacement changes with time for two objects A and B that move from rest, then the ratio between the speed of A and B is ..... .



(a) 1 (b) $\sqrt{3}$

(c) 0.5 (d) 3

10 Newton's 1st law is called ..... law.

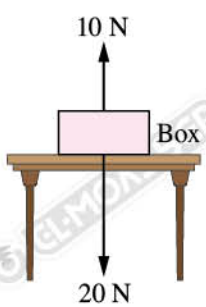
(a) force (b) acceleration (c) reaction (d) inertia

11 The space rockets after coming out of the Earth gravitational field, they ..... fuel.

(a) consume a lot of (b) need

(c) don't consume (d) consume less

12 The opposite box has weight 20 N and is affected by tension force 10 N, then the magnitude of the reaction force by which the surface affects the box is ..... .



(a) 10 N (b) 20 N

(c) 30 N (d) 40 N

13 When an object is projected by angle θ to the horizontal, then the gravitational force of the earth acts to change ..... of the velocity.

(a) the horizontal component only (b) the vertical component only

(c) the horizontal and the vertical components (d) $v_{ix} = v_i \cos \theta$

14 The flight time (T) is ..... the time taken to reach the maximum height.

(a) less than (b) equal to (c) half (d) double

EXAM 5

Second: **Answer the following questions (15, 16) :**

15 An object moves along the circumference of a circle of radius r. **What** is the magnitude of its displacement when it completes two revolutions ? **And why** ?

16 A stone fell from the roof of a building, if the stone passed by a person standing in a balcony 5 m high above the ground 2 seconds later, **Find** the building height ?

($g = 10\ m/s^2$)

Final Exam 6

Gharbia Governorate
«Samannoud Educational Administration»

First: Choose the correct answer (1 : 14) :

1 A car moves with initial velocity 25 m/s northward, if it is accelerated by an acceleration 3 m/s^2 southward , so its velocity after 6 s = ...

(a) 7 m/s (b) 17 m/s (c) 20 m/s (d) 21 m/s

2 An object falls freely from the top of a building of height d , hence its velocity increases and reaches v_f at the bottom of the building , so the height of the building is calculated from the relation ..... .

(a) $d = \frac{2 v_f^2}{g}$ (b) $d = \frac{2 v_f}{g}$ (c) $d = \frac{v_f}{2 g}$ (d) $d = \frac{v_f^2}{2 g}$

3 If you know that the year on Mars planet equals 16922 hour, so the relative error of this approximate equals ..... . (knowing that the year on mars = 687.98 day, day = 24.62 hour)

(a) 0.07 % (b) 0.09 % (c) 0.06 % (d) 0.08 %

4 If x = 10 cm, y = 10 m, so (x + y) equals ..... cm.

(a) 1011 (b) 1100 (c) 1010 (d) 1001

5 A motorcycle moves with velocity 20 m/s that makes an angle with the horizontal 30°, so the maximum height from the position of launching reached by the motorcycle equals ..... m ($g = 10 m/s^2$)

(a) 2.5 (b) 5 (c) 10 (d) 7.5

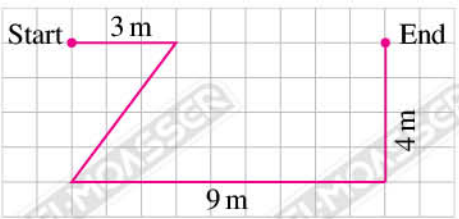
6 If a body moves from rest with a uniform acceleration, so its average velocity equals 5 m/s after making a displacement 10 m , so its average velocity during 4 s from the beginning of its motion = ... m/s.

(a) 20 (b) 6.25 (c) 10 (d) 12.5

7 The suitable measuring tool to measure the diameter of an electric wire is ..... .

(a) measuring ruler
(b) measuring tape
(c) ammeter caliper
(d) micrometer

8 If an object moves as in the opposite figure, the distance and the value of its displacement respectively = ...



(a) 18 m, 9 m
(b) 21 m, 9 m
(c) 36 m, 10.1 m
(d) 54 m, 9 m

9 If the displacement(d) of an object during time (t) is given from the relation $d = 0.5\ at^2$, so this object ..... .

(a) moves with non-uniform acceleration
(b) velocity decreases
(c) has started its motion from rest
(d) moves with uniform velocity

10 An object is projected with a tangent angle with the horizontal = θ, its initial velocity = v_i where $v_{ix} = v_{iy} = 20$ m/s , so the value of v_i and θ respectively are ..... .

(a) 40 m/s , 60°
(b) 28.28 m/s , 45°
(c) 40 m/s , 45°
(d) 28.28 m/s , 30°

11 From the examples of the indirect measurement is measuring ..... .

(a) an object weight by using the spring
(b) a sphere volume depending on its radius
(c) a liquid volume by using the graduated cylinder
(d) an object mass by using the common scale

12 Which of the following represents a translational motion?

(a) Movement of a tuning fork. (b) Movement of a simple pendulum.

(c) Movement of bee toy. (d) Movement of the lion.

13 In a tennis ball match, the maximum height for a player jump vertically upward = 1.25 m, so the consumed time by the player in the air = ... ($g = 10\ m/s^2$)

(a) 1 s (b) 0.5 s (c) 0.25 s (d) 0.15 s

14 If an object moves in a curved path, the ratio between the average speed for this object during a period of time and the value of the average velocity for the same period of time ..... .

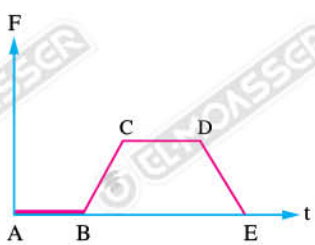
(a) equals one (b) is less than one

(c) is greater than one (d) equals the period of time

Second: Answer the following questions (15, 16) :

15 **Deduce** the dimensional formula for the pressure.
(where pressure = force/area , force = mass × acceleration)

16 The opposite graph represents the relation between the resultant force acting on a body and the time.
In which period of time the body moves with uniform velocity ? **And why** ?

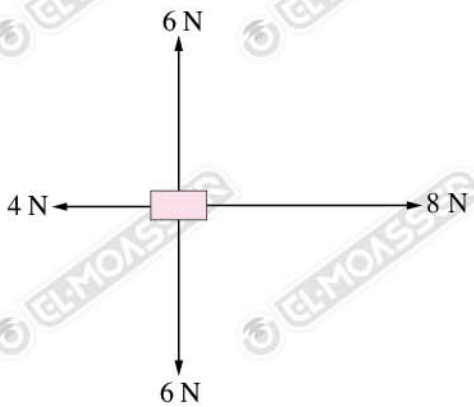


Final Exam 7

Suez Governorate
«North Educational Administration»

First: Choose the correct answer (1 : 14) :

1 In the opposite figure, Four forces act on a body, so the magnitude of their resultant and its direction are ..... .



(a) 2 N, in the northern east direction

(b) 3 N, in the northern west direction

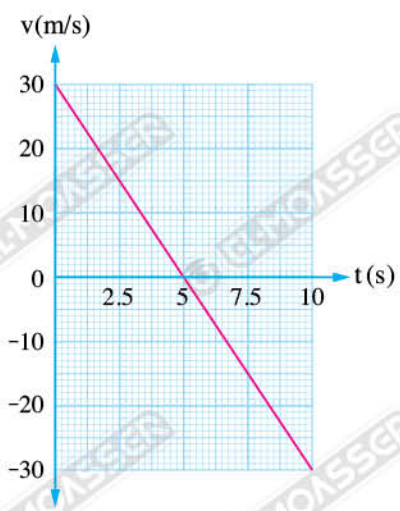
(c) 4 N, in the east direction

(d) 5 N, in the west direction

2 If both the direction of velocity and the acceleration are negative, then the speed of the object ..... .

(a) increases (b) decreases (c) is constant (d) equals zero

3 The opposite graph represents the relation between the velocity (v) and the time for a body that is projected vertically upwards, then the time taken by the body to reach the maximum height equals ..... .



(a) 2.5 s

(b) 5 s

(c) 7.5 s

(d) 10 s

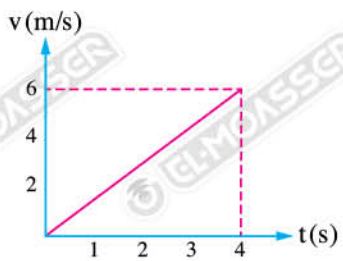
4 A fuel tank with a capacity of 0.2×10^9 cm^3, then the volume of the tank in cubic meters is ..... .

(a) 20 m^3 (b) 200 m^3 (c) 2×10^3 m^3 (d) 2×10^4 m^3

5 A person covers a displacement of 8 m to the east direction and returned to west direction through a displacement 6 m , then the total distance equals ..... the magnitude of displacement.

(a) half (b) double (c) seven times (d) ten times

6 The opposite graph represents the relation between the velocity (v) and the time (t) for a car that moves with uniform acceleration, so the velocity of the car after 100 m from starting its motion will be ..... .



(a) 10 m/s (b) $10\sqrt{2}$ m/s

(c) $10\sqrt{3}$ m/s (d) $10\sqrt{5}$ m/s

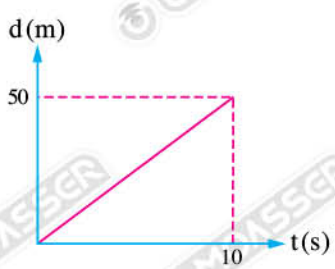
7 A ball falls downward from the top of a building of height h, then the velocity of the ball when it reaches the ground equals ..... .

(a) $\sqrt{2\,gh}$ (b) g (c) 3 gh (d) 2 g

8 An object moves according to the relation : $t = \sqrt{2\,d}$, so its displacement after half minute equals ..... .

(a) 400 m (b) 450 m (c) 500 m (d) 550 m

9 The opposite graph represents the relation between the displacement (d) and the time (t) of a body of mass 30 kg that moves in a straight line, so the acting resultant force on the body equals ..... .



(a) 30 N (b) 20 N

(c) 10 N (d) zero

10 If the measuring unit of a physical quantity is kg/m^3, then its dimensional formula is ..... .

(a) $M^0.L^3.T$ (b) $M.L^2.T^0$

(c) $M^2.L.T^{-1}$ (d) $M.L^{-3}.T^0$

11 Two objects are projected at two different angles θ_1 and θ_2 with the same initial velocity from the same point , then the horizontal range will be the same when the angles θ_1 and θ_2 equals ..... .

ⓐ 46° , 32° ⓑ 25° , 70° ⓒ 36° , 54° ⓓ 18° , 62°

12 Vector $\vec{A}$ has magnitude 20 units and its direction makes an angle 60° with the X-axis, then the difference between the magnitudes of horizontal and vertical components of vector A is ..... units.

ⓐ 7.32 ⓑ 10 ⓒ 17.32 ⓓ 27.32

13 The action force and the reaction don't be at equilibrium because they act on ..... .

ⓐ the same body ⓑ two different bodies

ⓒ static body ⓓ moving body

14 If a body starts its motion from rest and moves by uniform acceleration in a straight line, then its average velocity can be represented by the relation ..... .

ⓐ at ⓑ 2 at ⓒ $\frac{a}{t}$ ⓓ $\frac{1}{2}$ at

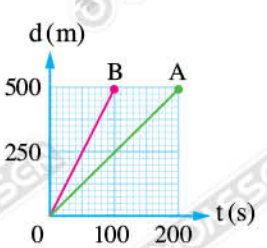
Second: Answer the following questions (15, 16) :

15 If the relative error in measuring the area of a playground is 0.06 where the actual value of the area is 30 m^2. **Calculate** the absolute error in measuring the area.

16 **In the opposite graph :**

Two objects (A) and (B) have moved from rest in a straight line.

Which object has been faster? **And why**?



Final Exam 8

South Sinai Governorate
«Physics Inspectorate»

First: Choose the correct answer (1 : 14) :

1 $\vec{A}$ and $\vec{B}$ are two vectors, if their dot product = 60 units and the magnitude of their cross product = 40 units, then the angle between them = ...

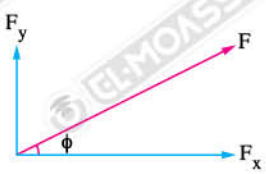
(a) 33.6° (b) 56.3° (c) 36° (d) 30°

2 A body moves in a straight line to cover 100 m with a speed 20 m/s, then covers 100 m with a speed 5 m/s, so the average speed is ..... .

(a) 7 m/s (b) 9 m/s (c) 10 m/s (d) 8 m/s

3 If $F_y = 0.5$, $F_x = 1$, then the value of ϕ is ..... .

(a) 63.4
(b) 26.5
(c) 30
(d) 60

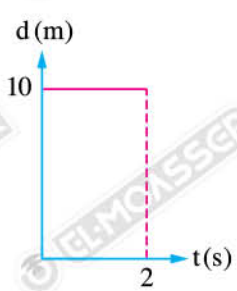


4 If the two physical quantities A and B have different dimensional formula, then which of the following mathematical operations is possible ..... .

(a) AB (b) (B – A) (c) (B + A) (d) (AB – B)

5 The opposite graph represents the relation of the displacement (d) versus time (t) for an object whose mass = 2 kg , then the resultant force acting on it equals ..... .

(a) 0 (b) 14
(c) 20 (d) 40



6 The dimensions of a metallic plate are found to be 1.27 cm, 4 cm, 10 cm, then the suitable measuring tool that can be used is ..... .

(a) ruler (b) vernier caliper (c) micrometer (d) meter tape

7 A body moves in a straight line with a uniform acceleration according to the relation : $v_f = \sqrt{25 + 6\,d}$, if the measuring unit of v_f is m/s and the measuring unit of distance(d) is m, then the acceleration value is ..... m/s^2

(a) 6 (b) 5 (c) 2 (d) 3

8 If the dimensional formula of (Z) equals LT^{-1} and the dimensional formula of (Y) equals LT^{-2}, then the dimensional formula of (3 Z.Y) is ..... .

(a) LT^{-2} (b) L^3T^{-2} (c) L^2T^{-3} (d) L^2T^{-2}

9 If a body (x) acts on another body (y) by a force of (10 N), then the reaction force of body x equals ..... .

(a) 10 N (b) – 10 N (c) 9 N (d) 0 N

10 Micrometer = ... millimeter.

(a) 10^2 (b) 10^{-3} (c) 10^3 (d) 10^8

11 A boat is moving towards east with velocity 20 m/s. If it begins to have acceleration 4 m/s^2 towards west direction. Then the displacement of the body after 15 s will be ..... .

(a) 350 m towards west (b) 300 m towards west

(c) 750 m towards north (d) 150 m towards west

12 If an object is projected upwards at an angle of 60° to the horizontal and with an initial velocity of 20 m/s, the maximum height reached by the object will be ..... .

($g = 10\ m/s^2$)

(a) 10 m (b) 15 m (c) 30 m (d) 55 m

13 A student measured the area of a garden which is found to be 200 m^2, if the relative error is 0.06, then the absolute error is ..... m^2

(a) 12 (b) 14 (c) 17 (d) 60

14 A car accelerates uniformly from rest to reach velocity (v) and covers distance (d), so the velocity of the car when it covers distance (2 d) ..... .

ⓐ v ⓑ 2 v ⓒ 4 v ⓓ 1.41 v

Second: Answer the following questions (15, 16) :

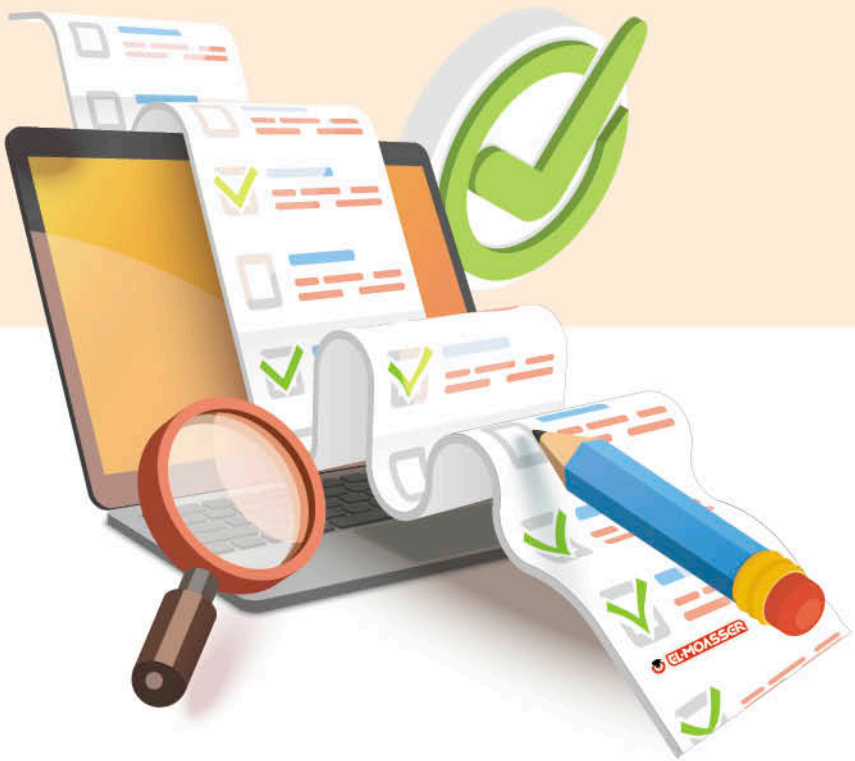
15 If X = (5 ± 0.1) cm and Y = (20 ± 0.1) cm, then **calculate** (Y – X)

16 A bicycle is moving in a straight line at a given instant by a velocity of 5 m/s with uniform acceleration 3 m/s^2, **calculate** its final velocity after covering a displacement of 12.5 m.

EL-MOASSER

Answers

of The final Exams
of some Educational
Administrations



PHYSICS

2024

1st SEC.

FIRST TERM

Answers of Final Exam 1

Cairo Governorate
«Hadayek al-Qubbah Educational Administration»

1 (b) energy
2 (c) $M.L^{-1}.T^{-2}$
3 (b) 0.02
4 (a) 40×10^{-3} kg
5 (b) 2 m
6 (c) 45°
7 (a) 10 N to the south
8 (d) swing
9 (d) 0.8 cm^2
10 (c) 30 m/s
11 (b) inertia
12 (d) speed does not change
13 (d) 8 sec
14 (b) 20 m/s

15 The pressure is a scalar quantity because although it equals force divided area, it acts inside an enclosed volume in all directions and has no definite direction, so it can be determined by its magnitude only. As pressure is only defined using other fundamental physical quantities (mass, length and time), it is a derived physical quantity.

16 $g = \text{slope} = \frac{0 - 50}{5 - 0} = -10 \text{ m/s}^2$

$v_f^2 = v_i^2 + 2 gd$

$0 = (50)^2 + 2 \times -10 \times d$

$d = 125$ m

Answers of Final Exam 2

Cairo Governorate
«Al-Zaytoun Educational Administration»

1 (b) $ML^{-1}T^{-1}$
2 (a) zero
3 (c) it moves for 1 s
4 (c) 5 m/s
5 (a) increases
6 (d) 50 N
7 (c) 4 d
8 (d) all the previous
9 (c) 8 s
10 (b) less than 1
11 (d) – F
12 (c) 48.9 m
13 (c) $\frac{at}{2}$
14 (c) 4 h

15 Because Newton's first law states that the object can't change its state of rest or motion in a straight line by itself.

16 To check the validity of this situation, we will calculate the value of acceleration from two different equations :

$a = \frac{v_f - v_i}{t} = \frac{8 - 0}{10} = 0.8 \text{ m/s}^2$ (1)

$\because d = v_i t + \frac{1}{2} at^2 = \frac{1}{2} at^2$

$\therefore a = \frac{2d}{t^2} = \frac{2 \times 50}{(10)^2} = 1 \text{ m/s}^2$ (2)

$\therefore$ The situation is impossible because the acceleration has two different values.

17 (a) $v_f = v_i + at$

$0 = 10 + (-2) \times t$

$-10 = -2t$

$t = \frac{10}{2} = 5$ s

(b) $d = v_i t + \frac{1}{2} gt^2$

$= 10 \times 5 + \frac{1}{2} \times -2 \times (5)^2 = 25$ m

Answers of Final Exam 3 — Cairo Governorate «Al-Khalifa & El Mokattam Directorate»

1 (c) 20000 μm

2 (b) length and time

3 (a) work

4 (d) A . B

5 (b) 400 m

6 (a) 3 m/s^2

7 (b) 160 m

8 (c) Newton third law

9 (b) 2000 N

10 (d) velocity

11 (c) 63.4°

12 (a) 8 m^2

13 (b) stopwatch

14 (d) backward

15 Volume $(V_{ol}) = \ell^3$

$= 10 \times 10 \times 10 = 1000\ cm^3$

$r_\ell = 0.1$

$r = 0.01 + 0.01 + 0.01 = 0.03$

$r = \frac{\Delta V_{ol}}{V_{ol}}$

$\Delta V_{ol} = r \times V_{ol} = 0.03 \times 1000 = 30\ cm^3$

16 $v_{av} = \frac{\text{total distance}}{\text{total time}}$

$= \frac{300}{60} = 5$ m/s

Answers of Final Exam 4 — Alexandria Governorate «El-Agamy Directorate»

1 (c) The object moves in a straight line with a constant velocity

2 (b) 10 m/s

3 (c) $\frac{1}{2} X\pi^2$

4 (c) Its horizontal velocity is constant and its vertical acceleration is constant.

5 (b) 50 ± 4.25

6 (b) he speeds off and then stops suddenly

7 (a) 0.043 mg

8 (b) Zero

9 (b) $\frac{1}{1}$

10 (c) Object (C)

11 (d) $\frac{2}{1}$

12 (d) 0.5 a

13 (b) 30.3 m/s

14 (d) $M^1L^{-1}T^{-1}$

15 $(v_f)^2 = v_i^2 + 2\,ad$

$\left(\frac{68 \times 5}{18}\right)^2 = \left(\frac{80 \times 5}{18}\right)^2 + (2)\,(a)\,(400)$

$a = -0.171\ m/s^2$

$0 = \left(\frac{80 \times 5}{18}\right)^2 + (2)\,(-0.171)\,(d)$

$d = 1444\ m$

16 $\vec{A} \cdot \vec{B} = AB \cos\theta = (5)\,(3)\,(\cos 180) = -15$ units

Answers of Final Exam 5

Menofia Governorate
«Menouf Educational Administration»

1 ⓓ scalar
2 ⓑ increases
3 ⓒ 0
4 ⓐ mole
5 ⓒ 45°
6 ⓒ hydrometer
7 ⓒ N
8 ⓒ rigid and chemically inactive
9 ⓓ 3
10 ⓓ inertia
11 ⓒ don't consume
12 ⓐ 10 N
13 ⓑ the vertical component only
14 ⓓ double

15 The displacement equals zero because the object returns back to the starting point i.e., the starting point is the ending point.

16 $d = v_i t + \frac{1}{2} gt^2$

$= 0 + \frac{1}{2} \times 10 \times (2)^2 = 20\ m$

Building height $= d_1 + d_2$

$20 + 5 = 25\ m$

Answers of Final Exam 6

Gharbia Governorate
«Samannoud Educational Administration»

1 ⓐ 7 m/s
2 ⓓ $d = \frac{v_f^2}{2g}$
3 ⓑ 0.09 %
4 ⓒ 1010
5 ⓑ 5
6 ⓒ 10
7 ⓓ micrometer
8 ⓑ 21 m , 9 m
9 ⓒ has started its motion from rest
10 ⓑ 28.28 m/s , 45°
11 ⓑ a sphere volume depending on its radius
12 ⓓ Movement of the lion.
13 ⓐ 1 s
14 ⓒ is greater than one

15 Pressure $= \frac{\text{Force}}{\text{Area}}$

Force = mass × acceleration

Acceleration $= \frac{\text{Velocity}}{\text{Time}}$

$[\text{Velocity}] = \left[\frac{\text{Displacement}}{\text{Time}}\right] = \frac{L}{T}$

$[\text{Acceleration}] = \frac{\frac{L}{T}}{T} = \frac{L}{T^2}$

$\therefore [\text{Force}] = M \times \frac{L}{T^2} = MLT^{-2}$

$[\text{Area}] = L^2$

$[\text{Pressure}] = \frac{MLT^{-2}}{L^2} = ML^{-1}T^{-2}$

16 The period AB

The body moves with uniform velocity when the net force acting on it is zero and this is what happens during the interval AB.

Answers of Final Exam 7

Suez Governorate
«North Educational Administration»

1 ⓒ 4 N, in the east direction

2 ⓐ increases

3 ⓑ 5 s

4 ⓑ 200 m^3

5 ⓒ seven times

6 ⓒ $10\sqrt{3}$ m/s

7 ⓐ $\sqrt{2gh}$

8 ⓑ 450 m

9 ⓓ zero

10 ⓓ $M.L^{-3}.T^0$

11 ⓒ 36°, 54°

12 ⓐ 7.32

13 ⓑ two different bodies

14 ⓓ $\frac{1}{2}$ at

15 r = 0.06 $A_o = 30\ m^2$

$r = \frac{\Delta A}{A_o}$

$\Delta A = r \times A_o = 0.06 \times 30 = 1.8\ m^2$

16 Object B is faster because

* The velocity of object A

= slope (A) $= \frac{d_A}{t_A} = \frac{500}{200} = 2.5$ m/s

* The velocity of object B

= slope (B) $= \frac{d_B}{t_B} = \frac{500}{100} = 5$ m/s

, so the velocity of B > the velocity of A

B is faster than A

Answers of Final Exam 8

South Sinai Governorate
«Physics Inspectorate»

1 ⓐ 33.6°
2 ⓓ 8 m/s
3 ⓑ 26.5
4 ⓐ AB
5 ⓐ 0
6 ⓑ vernier caliper
7 ⓓ 3
8 ⓒ $L^2 T^{-3}$
9 ⓑ – 10 N
10 ⓑ 10^{-3}
11 ⓓ 150 m towards west
12 ⓑ 15 m
13 ⓐ 12
14 ⓓ 1.41 v

---

15 $Y - X = (20 \pm 0.1) - (5 \pm 0.1)$

$Y - X = Z$

$Z_o = 20 - 5 = 15$ cm

$\Delta Z = 0.1 + 0.1 = 0.2$ cm

$Z = Z_o \pm \Delta Z = (15 \pm 0.2)$ cm

---

16 $v_f^2 - 5^2 = 2 \times 3 \times 12.5$

$v_f^2 = 75 + 25 = 100$

$v_f = 10$ m/s