Question No. 14

As a vase is falling down from a high building, its:

- kinetic energy increases
- kinetic energy decreases
- potential energy increases
- potential and kinetic energies are always equal.

Question No. 17

The work done to vertically lift a 450-kg beam at a uniform speed a distance of 15 m/s

- 675000 J
- 6750 J
- 67500 J
- 675 J

E_P

$W = F \cdot d$

$= m \cdot g \cdot h$

$= (450)(10)(15)$

Question No. 1

A car in linear motion has initial speed = 20 m/s. If it travels for 20 seconds with acceleration = 2 m/s/s, the total distance it covers is.

- 400 m
- 100 m
- 200 m
- 800 m

$$v_f = v_i + at \quad \times$$

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

$$= (20)(20) + \frac{1}{2}(2)(20)^2$$

$$= 400 + 400$$

$$= 800$$

Check your understanding

he work done by a 100-N force to move a box 2 m in the direction of the force is:

;0 J
.00 J.m
B) 100 N.m
D) 200 J

$W = f d$
$= (100)(2)$
$= 200$

he work done by a 100-N force to move a box 2 m in a direction making 60° with the force is:

;0 J
.00 J.m
B) 100 N.m
D) 200 J

$W = f d \cos\theta$
$= (100)(2)\cos(60)$

When raising loads upward, if the mass is doubled, the work done will be:

the same
halved
B) doubled
D) quadrupled (four times)

$E_p = mgh$

When raising loads upward, if the mass is doubled and the height is halved, the work done will be:

the same
halved
B) doubled
D) quadrupled (four times)

$E_p = mgh$

The power of a lever used to raise a 50-kg load a 10-m height in 5 s is:

2 kW
1 kW
B) 5 kW
D) 0.5 kW

$P = \frac{W}{t} = \frac{f \cdot d}{t} = \frac{mgd}{t} = \frac{(50)(10)}{5}$
$= 1000 \text{ watt} \times 10^{-3}$
$=$

- The mecha
due to its
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There ar
- Poten
- Kine

Question No. 17

The work done to vertically lift a 450-kg beam at a uniform speed a distance of 15 m is

- 675000 J
- 6750 J
- 67500 J
- 675 J

No. 20

e human body average temperature is 37 °C. What is it in °F?

- 73.1 °F
- 82.7 °F
- 65.5 °F
- 98.6 °F

$F = \frac{9}{5}C + 32$

$= \frac{9}{5} \times 37 + 32$

$=$

Question No. 17

A work of 50 kJ is done to vertically lift a beam at a uniform speed a distance of 25 m. The weight of the beam is.

- 2000 N
- 200 N
- 50 N
- 500 N

$E_p = mgh$

$m = \frac{E_p}{gh} = \frac{50 \times 10^3}{(25)(10)}$

=

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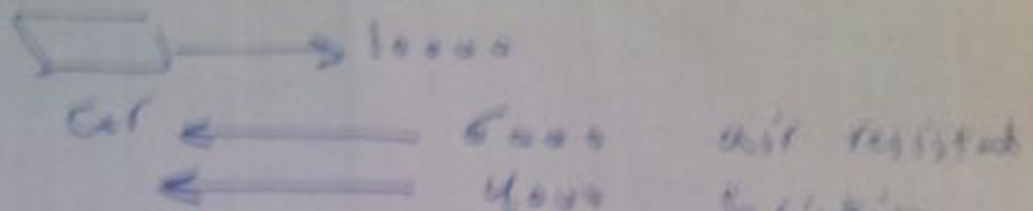
Question No. 9

For a moving car, if the forward force of its engine is 10000 N, air resistance on it is 6000 N, and the force of friction on it is 4000 N, the car will

- have zero acceleration
- have changing acceleration
- slow down
- accelerate forward



$(6000 + 4000) = 10000$

$10000 = 10000$

$= 0$

Question No. 23

In the Fahrenheit temperature scale, the absolute zero (0 K) is approximately at:

- 273 °F
- 0 °F
- -460 °F
- -273 °F

$$0K = -273\,C$$

$$= \frac{9}{5}C + 32$$

$$= -459.4$$

Question No. 7

You applied a horizontal force of 200 N to push a level table but the table remainers at rest. The static friction force is

- 20 kg
- 200 kg
- 200 N
- 20 N

Question No. 13

A large boulder at rest on top of a hill possesses

- potential energy
- both potential and kinetic energy
- kinetic energy
- no energy

Question No. 4

If an object is not in free fall, before it reaches terminal speed, its acceleration is:

- less than g
- equal to g
- more than g
- zero

Question No. 2

Assume that you were driving with a constant speed of exactly 120 km/h for 5 minutes. During this time your instantaneous speed is

- 60 km/h
- 100 km/h
- 120 km/h
- 120 m/s

Constant speed = instantaneous speed

Question No. 25

One kilocalorie is the amount of heat that increases the temperature of 1 kg of water by:

- 273 K
- 10 K
- 1 °C
- 32 °F

Question No. 13

A large boulder at rest on top of a hill possesses

- potential energy
- both potential and kinetic energy
- kinetic energy
- no energy

Question No. 9

"If no net force acts on an object, it will move at constant velocity" is a statement of:

- Pythagoras principle
- Newton's first law
- Newton's third law
- Newton's second law

Question No. 2

An object is moving in straight line and decreases its speed uniformly from 40 m/s to 10 m/s within 10 seconds. Its deceleration is

- -1 m/s/s
- -0.5 m/s/s
- -3 m/s/s
- -2 m/s/s

$$a = \frac{v_f - v_i}{t} = \frac{10 - 40}{10} = \frac{-30}{10}$$

$$a = -3$$

Question No. 19

A 400-kg concrete beam is to be raised 30 m in 30 s. How many kilowatts of power are needed to do the job?

- 3 kW
- 1 kW
- 2 kW
- 4 kW

$$P = \frac{W}{t} = \frac{(400)(10)(30)}{30}$$

$$= 4000 \text{ watt}$$

$$= 4.000 \times 10^{-3} \text{ kw}$$

$$= 4 \text{ kw}$$

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Question No. 7

If a man pushes a 100 kg box with a 100 N force on a level floor and the box does not move, the force of friction between the box and the floor is

- 200 N
- 100 N
- 0 N
- 50 N

Question No. 16

Power is defined as the:

طاقت معرف

- force per unit time
- force × distance
- energy × time
- ✓ rate of doing work

معدل بذل شغل

Question No. 10

A force of 1 N is the same as:

قوة ١ نيوتن تساوي

$$F = m\,a$$

$$= kg\ m/s^2$$

- 1 kg m s
- 1 kg s/m
- 1 kg m/s
- 1 kg m/s/s

Question No. 17

The work done by a worker to lift 100 N of bricks to a height of 3 m is:

كم شغل يبذل العامل لرفع

$E_p = mgh$

$= (100)(3)$

$= 300$

- 100 J
- 300 J
- 400 J
- 200 J

Question No. 3

An object is thrown vertically upward. Its speed at the maximum height is:

- > zero
- zero
- maximum
- < zero

Question No. 6

A man has a mass of 75 kg on Earth. His mass on the Moon is:

- M = 12.5 kg
- M > 75 kg
- M = 75 kg
- M < 75 kg

$m_{earth} = m_{moon}$

$weight_{earth} = 6\ weight_{moon}$

Question No. 13

A 0.5-kg book on a table has a potential energy of 5 J (relative to the ground). The table's height is:

- 1.5 m
- 0.3 m
- 1 m
- 0.5 m

$$E_p = mgh$$

$$h = \frac{E_p}{mg} = \frac{5}{(0.5)(10)}$$

Question No. 7

Two workers push in the same direction on a box against a frictional force. One pushes with a force of 500 N, the other with a force of 600 N. If the net force is 400 N, the friction force is:

- 500 N
- 700 N
- 300 N
- 400 N

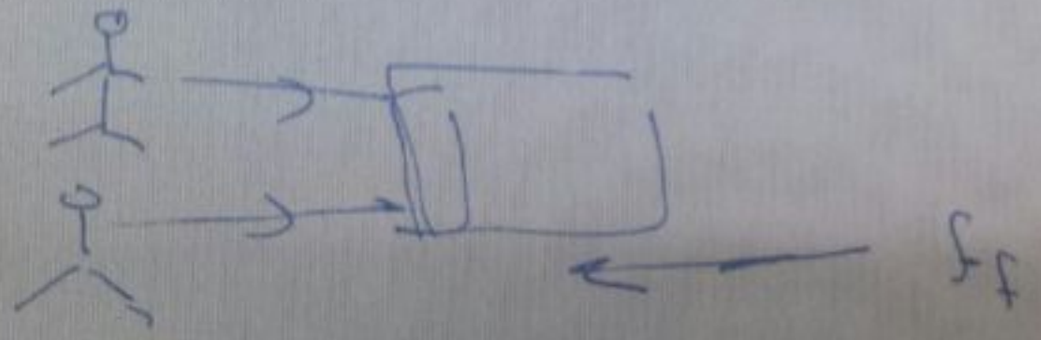
Same direction $F_3 = 600 + 500 = 1100$ N

$F_{net} = F - f_f$

$400 = 1100 - f_f$

$1100 - 400 = f_f$

$= 700$



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Question No. 2

A car in linear motion with acceleration = 2 m/s/s and initial speed = 20 m/s reaches a final speed = 30 m/s after going a distance of:

- 500 m
- 250 m
- 100 m
- ✓ 125 m

$$v_f^2 - v_i^2 = 2ad$$

$$d = \frac{v_f^2 - v_i^2}{2a} = \frac{(30)^2 - (20)^2}{(2)(2)}$$

$$= 125 \text{ m}$$

Question No. 24

How much heat Q must be absorbed by 10 kg of steel (specific heat = 0.115 kcal/kg.°C) to heat it from zero to 150 °C?

- 173 kcal
- 71 kcal
- 107 kcal
- 751 kcal

$$Q = mc\Delta t$$

$$= (10)(0.115)(150 - 0)$$

$$= 172.5 \text{ kcal}$$

$$= 173$$

Question No. 1

An object travels in straight line and increases its speed uniformly from 80 km/h to 120 km/h. Its average speed is

- 250 km/h
- 200 km/h
- 100 km/h
- 150 km/h

$$V_{av} = \frac{V_f + V_i}{2} = \frac{80 + 120}{2}$$

Question No. 14

With no air resistance and no friction a swinging pendulum would

- swing only 10 times
- swing forever
- swing for short time
- swing just once

Question No. 7

If a man pushes a 100-kg box on a level floor and the box moves with constant velocity, the push force on the box is: (given: coefficient of kinetic friction ($\mu = 0.2$))

- 100 N
- 50 N
- 1000 N
- 200 N

$f_f = \mu f_N$ ← قوة الاحتكاك

f_N ← قوة التعويض

قوة التعويض = الوزن = mg

$= (0.2)(100 \times 10)$

Question No. 14

With no air resistance and no friction a swinging pendulum would

- swing only 10 times
- swing forever
- swing for short time
- swing just once

Question No. 7

If a man pushes a 100-kg box on a level floor and the box moves with constant velocity, the push force on the box is: (given: coefficient of kinetic friction ($\mu = 0.2$))

- 100 N
- 50 N
- 1000 N
- 200 N

$f_f = \mu f_N$ ← قوة الاحتكاك

f_N ← قوة التعويض

قوة التعويض = الوزن = mg

$= (0.2)(100 \times 10)$

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Question No. 24

4850 cal of heat is equivalent to:

- 33.5 kJ
- 31.7 kJ
- 20.3 kJ
- 11.2 kJ

Cal $\xrightarrow{\times 4.19}$ J $\xrightarrow{\times 10^{-3}}$ kJ

shift 8 40

$= 10^{-3}$

Question No. 19

How long would it take a 1500-W motor to raise a 100-kg mass to a height of 15 m?

- 30 s
- 40 s
- 10 s
- 20 s

$$P = \frac{W}{t} \rightarrow W = f \cdot d = mgd$$

$$P = \frac{mgd}{t}$$

$$t = \frac{mgd}{P} = \frac{(100)(10)(15)}{1500} = 10$$

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Question No. 18

Work is done on an object if the object is affected by:

- force and displacement
- medium force without displacement
- large force without displacement
- small force without displacement

Question No. 10

If a net force of 100 N causes a crate to accelerate at 0.8 m/s/s, the crate's mass is

- 125 kg
- 80 kg
- 10 kg
- 50 kg

$$f = ma$$

$$m = \frac{f}{a}$$

$$= \frac{100}{0.8}$$

$$=$$

Question No. 11

If there is a net force acting on a moving object, the object must be:

- small
- large
- accelerating
- moving with constant velocity $f = 0$

Question No. 5

The friction force always acts in a direction:

- same as the direction of weight
- normal to the surface
- opposite to the direction of motion
- same as the direction of motion

Question No. 14

As a rock is falling down from a hill, its

- potential energy increases
- potential energy decreases
- potential and kinetic energies are always equal
- kinetic energy decreases

Kinetic Energy increases

Question No. 4

An object is thrown vertically upward. As it is going upward the speed is:

- zero
- constant
- increasing
- decreasing

Question No. 14

Before reaching the ground, an apple falling down from a tree has

قبل الوصول إلى الأرض تفاح يسقط من الشجرة

- both potential and kinetic energy
- no energy
- potential energy only
- kinetic energy only

Question No. 12

Newton's third law states that for a force (1) applied from object (A) on object (B) there is a force (2) applied from B on A such that

forces (1) and (2) are perpendicular

forces (1) and (2) are equals in magnitude

force (1) is less than force (2)

force (1) is more than force (2)

Question No: 8

An object that has big inertia must have:

- big mass
- small mass
- big area
- big volume

Question No. 9

If no external forces act on a moving object, it will

- increasing acceleration
- zero acceleration
- zero velocity
- increasing velocity

The weight of a 20-kg brick is nearly:

$\vec{F}_g = mg$

$= (20)(10)$

$= 200$ N

- 200 kg
- 200 N
- 20 N
- 20 kg

Question No. 16

Gravitational potential energy of an object is due to its:

- velocity
- temperature
- position
- acceleration

Question No. 4

The acceleration of a freely falling object is:

جسم سقوط آزاد کے

$R = 0$

$a = g$

- the acceleration due to gravity
- greater than the acceleration due to gravity (g)
- zero $R = weight$ جسم کا وزن
- less than the acceleration due to gravity

Question No. 3

After a falling object reaches terminal speed, its acceleration is:

- positive
- zero
- unknown
- negative

If you pushed a wall and it did not move, we can say that there is

A

- work done on your muscles
- no force acted on your muscles
- work done on the wall
- no force acted on the wall

Question No. 7

Question No. 4

If an object is in free fall, the distance it covers every successive (متتالي) second

- is zero
- keeps decreasing
- remains constant
- keeps increasing

D

Question No. 10

According to Newton's second law (F=ma), if m is kept constant, then:

- F is directly proportional to the acceleration a
- F = a/m
- a = m
- F is inversely proportional to the acceleration a

Question No. 23

Temperature is a measure of the _____ an object:

- color of
- hotness or coldness of
- area of
- volume of

Question No. 18

A constant force F is making an angle 25° with the direction of motion of an object. If the distance moved is 100 m and the work done on the object is 1820 J, the force F is:

- 20 N
- 10 N
- 40 N
- 30 N

$$W = f\, d \cos\theta$$

$$f = \frac{W}{d \cos\theta}$$

$$= \frac{1820}{(100)\cos(25)}$$

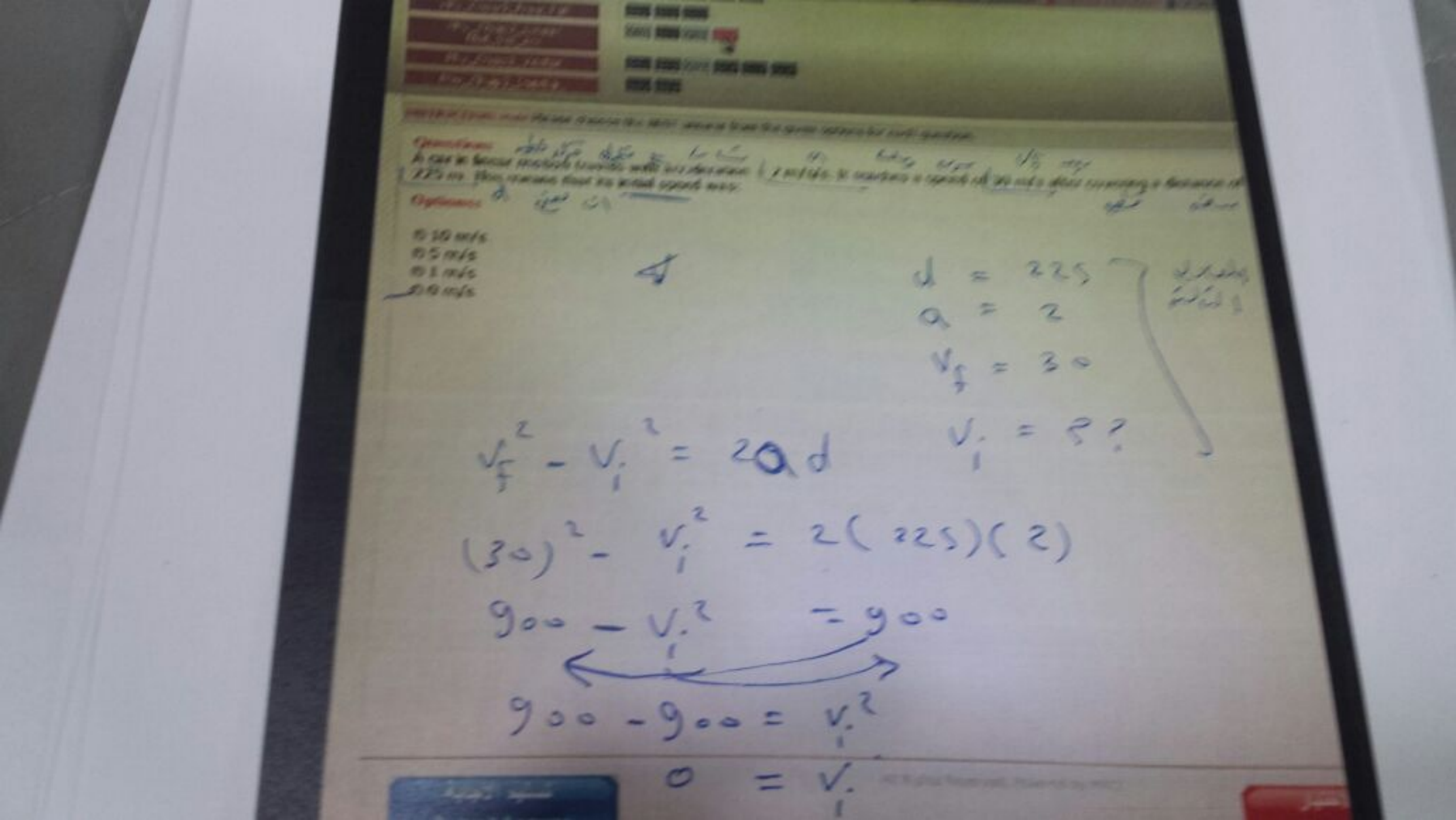
Question No. 16

Energy is defined as the:

تعرف الطاقة

- mass x speed
- ability to do work
- mass x acceleration
- speed x time

مدى شغل شيء ما



$d = 225$

$a = 2$

$V_f = 30$

$V_i = ??$

$$V_f^2 - V_i^2 = 2ad$$

$$(30)^2 - V_i^2 = 2(225)(2)$$

$$900 - V_i^2 = 900$$

$$900 - 900 = V_i^2$$

$$0 = V_i$$

Question No. 23

Converting -40 °F to Celsius gives:

- 50 °C
- -40 °C
- -60 °C
- 30 °C

$$C = \frac{5}{9}(F - 32)$$

$$= \frac{5}{9}(-40 - 32)$$

$$= -40$$

Same reading

Question No. 15

If the velocity of an object doubles, its kinetic energy

$$E_K = \frac{1}{2} m v^2$$

$$4 = (2)^2$$

- does not change
- quadruples (becomes four times)
- doubles
- triples (becomes three times)

Question No. 14

As a stone that is thrown vertically upward goes up, its:

- potential and kinetic energies are always equal.
- kinetic energy increases
- potential energy decreases
- potential energy increases

Question No. 4

After a falling object reaches terminal speed, its speed is

گرنے والی شے جب سطح پر پہنچ جائے

- decreasing
- zero
- increasing
- constant

Question No. 8

The physical quantity that measures inertia is:

الصفة تقيس الة الكمية الفيزيائية

- length
- area
- volume
- mass

Question No. 1

The acceleration due to gravity of the Earth is 6 times that of the Moon. If the potential energy of the same object placed at the same height on the Moon is E_{pM} and on the Earth is E_{pE}, they are then related as:

- $E_{pE} = 0.6E_{pM}$
- $E_{pE} = 6E_{pM}$
- $E_{pE} = (1/6)E_{pM}$
- $E_{pE} = E_{pM}$

$E_{Pearth} = E_{P\,moon}$

$m_e g h = 6 m g h_m$

Question No. 23

Temperature scales that give the same temperature difference ΔT are the:

- Kelvin and Celsius
- Celsius and Joule
- Fahrenheit and Kelvin
- Celsius and Fahrenheit

100°C — 373 K

ΔT = 100

0°C — 273 K

ΔT = 100

Physics

Question No. 19

The power developed to raise a 1000-kg steel wrecking ball to a height of 20 m in 10 s is

- 50 kW
- 30 kW
- 20 kW
- 40 kW

$$P = \frac{mgd}{t} = \frac{(1000)(10)(20)}{10}$$

$$= 20000 \text{ W}$$

$$= 20 \text{ kW}$$

Question No. 1

The acceleration due to gravity of the Earth is 6 times that of the Moon. If the potential energy of the same object placed at the same height on the Moon is E_{pM} and on the Earth is E_{pE}, they are then related as:

- $E_{pE} = 0.6E_{pM}$
- $E_{pE} = 6E_{pM}$
- $E_{pE} = (1/6)E_{pM}$
- $E_{pE} = E_{pM}$

$E_{Pearth} = E_{P\,moon}$

$m_e g h = 6 m g h_m$

Question No. 23

Temperature scales that give the same temperature difference ΔT are the:

- Kelvin and Celsius
- Celsius and Joule
- Fahrenheit and Kelvin
- Celsius and Fahrenheit

100°C — 373 K

ΔT = 100

0°C — 273 K

ΔT = 100

Question No. 20

In the Celsius temperature scale, the absolute zero is at

- 273 °C
- -273 °C
- -459 °C
- 0 °C

Question No. 16

The energy units are.....

وحدات الطاقة

- Kilogram
- Pound
- Kilometer
- Kilocalories

Question No. 1

An object travels in straight line and decreases its speed uniformly from 40 m/s to a full stop within 10 seconds. Its deceleration is:

- -2 m/s/s
- - 4 m/s/s
- -1 m/s/s
- -3 m/s/s

$$a = \frac{V_f - V_i}{t} = \frac{0 - 40}{10}$$

$$= \frac{-40}{10} = -4$$

Question No. 13

A 2-kg laptop on a table of height 75 cm has a potential energy of (relative to the ground):

- 15 J
- 150 J
- 1.5 J
- 10 J

$$E_p = mgh$$
$$= (2)(10)(75)$$

Question No. 5

Kinetic friction is always _____ _____ the maximum static friction.

- less than
- more than
- half
- equal to

Question No. 10

If the net force on an 100-kg crate is 50 N, its acceleration is:

- 1 m/s/s
- 0.5 m/s/s
- 5 m/s/s
- 2 m/s/s

$$f = m a$$

$$a = \frac{f}{m} = \frac{50}{100}$$

$$= 0.5$$

Question No. 9

"A moving object likes to keep its state of motion" is the meaning of:

- acceleration
- inertia
- velocity
- force

Question No. 21

In the Celsius temperature scale, water boils at:

سیلسیس درجہ حرارت پیمائش میں پانی کس درجہ پر ابلتا ہے؟

- 212 °C
- 273 °C
- 373 °C
- 100 °C

Question No. 5

What is the unit of the coefficient of friction?

ما هي وحدة معامل الإحتكاك

- has no units ليس له وحدة
- meter
- joule
- newton

Physics

Question No. 4

If a stone drops on a free fall from the edge of a mountain, the distance it covers after 5 seconds is (use g = 10 m/s/s)

- 250 m
- 45 m
- 125 m
- 80 m

$$d = \frac{1}{2} g t^2$$

$$= \frac{1}{2}(10)(5)^2$$

$$=$$

Question No. 16

Joule/second is a unit of:

- Energy
- Work
- Temperature
- Power

Question No. 15

At what speed does a 20-N weight have a kinetic energy of 100 J?

- 10 m/s
- 20 m/s
- 30 m/s
- 40 m/s

$$E_k = \frac{1}{2} m v^2$$

$$v^2 = \frac{2E_k}{m}$$

$$v = \sqrt{\frac{2E_k}{m}}$$

$$m = \frac{20}{10} = 2\ kg$$

$$= \sqrt{\frac{2(100)}{2}}$$

$$= 10$$

Phy

Question No. 15

A 50-g bullet is fired from a gun with 4-kJ kinetic energy. Its velocity is:

- 500 m/s
- 300 m/s
- 400 m/s
- 200 m/s

$$E_k = \frac{1}{2} m v^2$$

$$v^2 = \frac{2E_k}{m}$$

$$v = \sqrt{\frac{2E_k}{m}}$$

$$= \sqrt{\frac{2(4 \times 10^3)}{5.0 \times 10^{-2}}}$$

Question No. 16

The kinetic energy of an object is due to its:

area

motion

colour

position

Question No. 21

In the Kelvin temperature scale, water boils at

- 212 K
- 100 K
- 273 K
- 373 K

Question No. 22

In the Kelvin temperature scale, water freezes at:

- 32 K
- 273 K
- 212 K
- 0 K

$0^{\circ}C$

$K = C + 273$

$= 0 + 273$

$= 273$

Question No. 12

When a man pushes on a wall with force 100 N, the wall pushes back on him with force of magnitude:

الحائط يدفع الى الخلف بقوة مقدارها 100 N

- 100 N
- 50 N
- 200 N
- 0 N

Question No. 25

When we heat a block of iron, the iron atoms:

- vibrate slower
- vibrate faster
- increase in number
- stop moving

Question No. 12

When you fire a bullet (طلقة) from a handgun, the recoil (الإرتداد) you feel is called the:

- normal to the action
- action
- normal to the reaction
- reaction

Question No. 6

Friction on a non-moving object is called:

- static friction
- kinetic friction
- terminal friction
- dynamic friction

Question No. 13

A wrecking ball of mass 200 kg is raised 6 m above the ground. What is the potential energy of the ball?

- 120 kJ
- 0.12 kJ
- 12 kJ
- 1.2 kJ

$$E_p = mgh$$
$$= (200)(10)(6)$$
$$= 12000$$
$$= 12\ kJ$$

estion No. 17

bullet is fired from a handgun with a force F1, the handgun recoils (ترتد) with a force F2. We can say that :

F1 and F2 are equal and opposite

F1 and F2 are equal and in the same direction

F1 and F2 are equal and perpendicular

F1 and F2 are not equal

Question No. 7

The friction force between two surfaces depends on

★ nature of the surfaces and the normal force

only the normal force

nature of the surfaces and their area

only nature of the surfaces

Question No. 25

In the Kelvin temperature scale, water boils at

- 100 K
- 212 K
- 273 K
- 373 K

Question No. 24

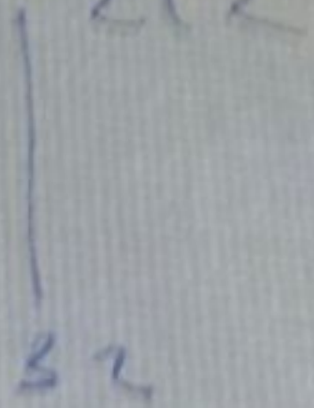
Which of the following temperatures is NOT possible?

(a) 4500 °C

(b) -274 °F

(c) -200 °C

(d) -278 °C



Question No. 11

Two forces 10 N and 25 N act in opposite direction on an object which moved with an acceleration of 3 m/s/s.

- 3 kg
- 5 kg
- 8 kg
- 12 kg

$$\text{net force} = 25 - 10 = 15 \text{ N}$$

$$m = \frac{F}{a} = \frac{15}{3} = 5$$