AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

COMPOSITE EXAMINATION 2008

Physics Paper I

Time allowed: 40 minutes Marks 30

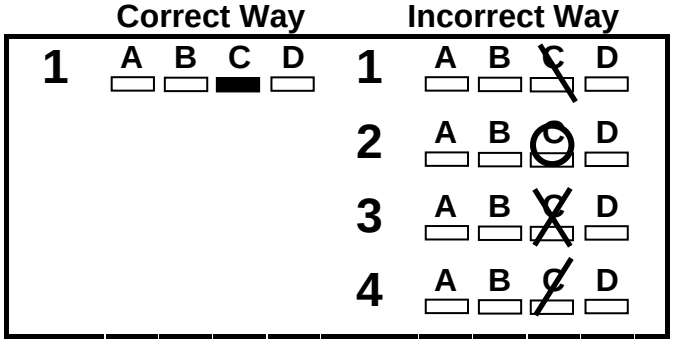
INSTRUCTIONS

1. Read each question carefully.

2. Answer the questions on the separate answer sheet provided. Do NOT write your answers on the question paper.

3. There are 100 answer numbers on the answer sheet. Use answer numbers 1 to 30 only.

4. In each question there are four choices A, B, C, D. Choose ONE. On the answer grid black out the box for your choice with a pencil as shown below.



5. If you want to change your answer, ERASE the first answer completely with a rubber, before blacking out a new box.

6. Do NOT write anything in the answer grid. The computer only records what is in the boxes.

1. Who discovered the laws of reflection and refraction and explained the formation of shadow.

   A. Abu Rehan Al-Beruni
   B. Ibnul-Haitham
   C. Musa-al-Khwarizmi
   D. Yaqoob-Al-Kindi

2. Experiment is an organised process used to test the truth of

   A. hypothesis.
   B. law.
   C. prediction.
   D. theory.

3. The only base unit is

   A. m.
   B. ms^{-1}.
   C. ms^{-2}.
   D. m^3.

4. The owner of a house wants to purchase a window blind for a square window. What would be the required area of the blind if the length of the window is 1.8m?

   A. $1.84m^2$
   B. $3.24m^2$
   C. $3.61m^2$
   D. $5.83m^2$

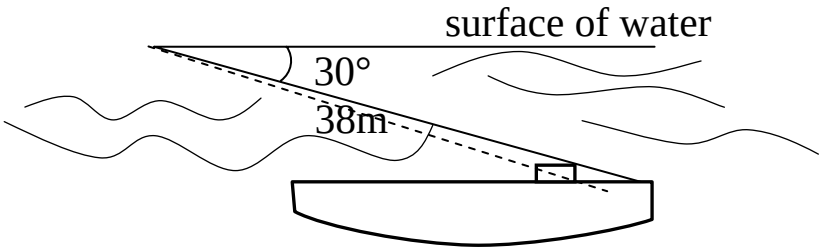
5. The velocity and acceleration of a body moving with uniform speed in a circular path will be

   A. equal.
   B. in the opposite direction.
   C. in the same direction.
   D. mutually perpendicular.

6. The resisting force between two surfaces before the motion starts is called

   A. friction.
   B. kinetic friction.
   C. rolling friction.
   D. static friction.

7.



In the above diagram a submarine dives 38m at an angle of 30^{o} to the surface of the sea. How deep is the submarine from the surface? ($\sin 30^{\circ} = 0.5, \cos 30^{\circ} = 0.866$)

A. 19m
B. 26.1m
C. 43.8m
D. 65.81m

8. For two like parallel forces the magnitude of the forces will be

A. different.
B. not necessarily the same.
C. not necessarily different.
D. the same.

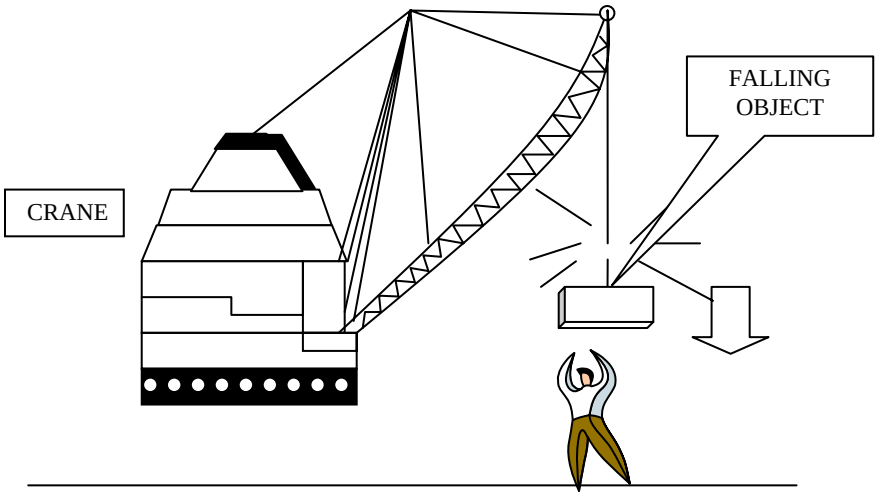
9. A 30cm long spanner is used to open a nut and the force required to open the nut is 10N. What will be its torque?

A. 3Nm
B. 30Nm
C. 300Nm
D. 3000Nm

10. In case of same speed and mass, if the speed of an object is greater, then the centripetal force is

A. greater.
B. neutral.
C. smaller.
D. be zero.

11.



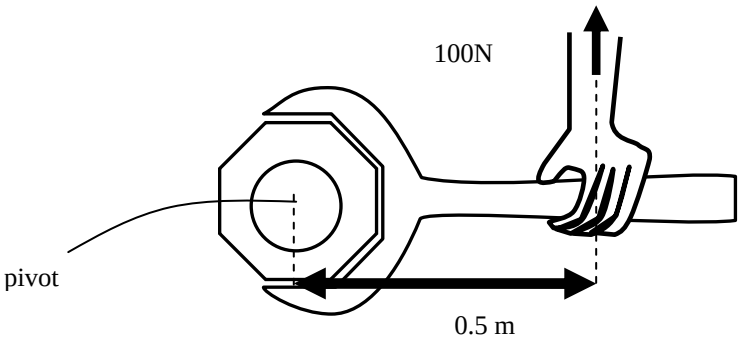
The above example shows energy transformation from

A. chemical energy ⟶ heat energy.
B. chemical energy ⟶ gravitational potential energy.
C. gravitational potential energy ⟶ kinetic energy.
D. kinetic energy ⟶ elastic potential energy.

12. The kinetic energy of a cannon ball of mass 4kg travelling at a speed of 40 ms^{-1} will be

A. 160 J.
B. 1600 J.
C. 320 J.
D. 3200 J.

13.



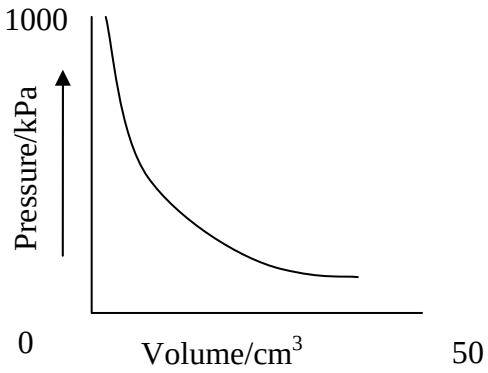
The momentum being applied to this spanner is

A. 50 Nm.
B. 200 Nm^{-1}.
C. 500 Nm.
D. 1000 Nm.

14. If a substance is compressed then the kinetic energy of its molecules will

A. become zero.
B. decrease.
C. increase.
D. remain unchanged.

15.



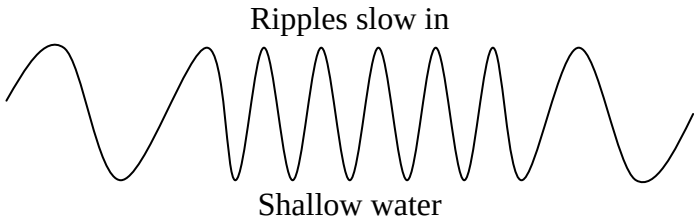
The graph between pressure and volume verifies

A. Boyle's law.
B. Charles' law.
C. General gas law.
D. Pressure law.

16. Sea waves carry a lot of

A. kinetic energy.
B. mechanical energy.
C. potential energy.
D. wave energy.

17. The ripple slows down in shallow water because of



A. defraction of water waves.
B. interference of water waves.
C. reflection of water waves.
D. refraction of water waves.

18. At which of the following level of sounds is the loss of hearing and headache caused?

    A. 90dB
    B. 100dB
    C. 120dB
    D. 150dB

19. Which waves are used to measure the depth of an ocean?

    A. Infrasonic waves
    B. Panasonic waves
    C. Supersonic waves
    D. Ultrasonic waves

20. The power of a lens having focal length Om, will be

    A. equal to the focal length.
    B. greater than the focal length.
    C. smaller than the focal length.
    D. impossible to calculate.

21. The refractive index of ice is

    A. 1.000.
    B. 1.0003.
    C. 1.30.
    D. 1.33.

22. Short-sightedness or myopia occurs when the thickness of eye ball

    A. decreases.
    B. increases.
    C. some time decreases.
    D. remains the same.

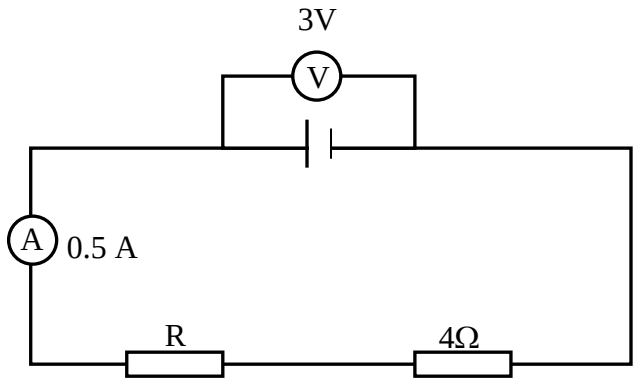
23. If two positively charged bodies are placed at a distance ‘r’ and if the distance between them is increased by 2r then the coulomb force will be

    A. 2F.
    B. 4F.
    C. F/4.
    D. F.

24. If we place an insulator between the plates of a capacitor then the capacitance will

    A. decrease.
    B. increase.
    C. remain unaffected.
    D. zero.

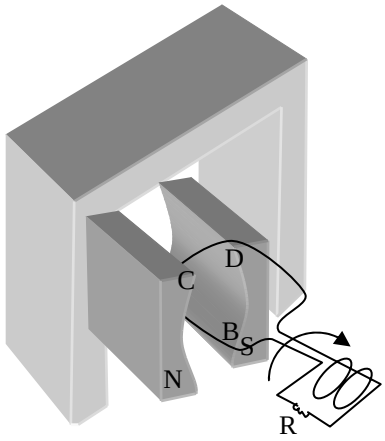
25.



A circuit is set up as shown in the diagram. Assuming that the ammeter has negligible resistance, what is the value of Resistor R?

A. 0.5 ohms.
B. 1.5 ohms.
C. 2.0 ohms.
D. 3.0 ohms.

26.



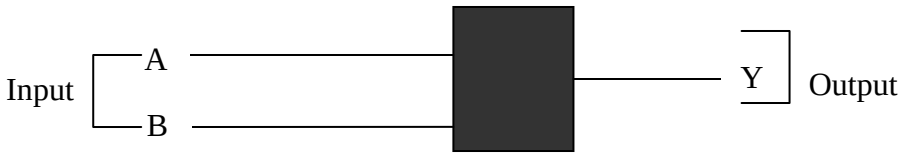
In an AC generator, the coil is rotating in a clock-wise direction and the field is as shown in the above figure. The direction of current will be

A. from C to B.
B. from D to A.
C. towards N.
D. from B to C.

27. The protons and neutrons in the nucleus are called

A. neutroprons.
B. nucleons.
C. protons.
D. pro-neutrons.

28.



Black box

Which logic gate is inside the black box if when one or both inputs is high, then Y is high?

A. AND or OR
B. NAND
C. OR
D. NOR and NAND

29. The current flowing through emitter, base and collector of transistor are I_E, I_B and I_C. Which shows the correct relationship among them?

A. $I_E > I_C$ and $I_E > I_B$
B. $I_E > I_C$ and $I_B > I_C$
C. $I_C > I_B$ and $I_B > I_E$
D. $I_C > I_E$ and $I_B > I_E$

30. In mobile telephones VHF radio waves are used. What is the frequency of these waves?

A. 90 MHz.
B. 900 MHz.
C. 9000 MHz.
D. 90000 MHz.

END OF PAPER

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS IX EXAMINATION 2009

Physics Paper I

Time allowed: 35 minutes Marks 25

INSTRUCTIONS

1. Read each question carefully.
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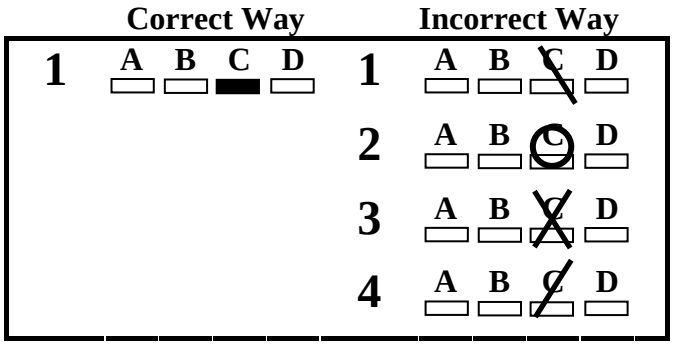


5. If you want to change your answer, ERASE the first answer completely with a rubber, before blacking out a new box.
6. DO NOT write anything in the answer grid. The computer only records what is in the boxes.

1. A boy is winding a copper wire on an iron rod and passing current through it. He is experimenting with

   A. electromagnetism.
   B. solid physics.
   C. electricity.
   D. mechanics.

2. Which one of the following remains the same for a solid anywhere in the universe?

   A. Volume
   B. Density
   C. Weight
   D. Mass

3. Which one of the following is NOT measured in Newton?

   A. Pressure
   B. Friction
   C. Push
   D. Pull

4. In 0.00101 the total numbers of significant figures are

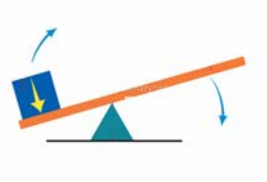
   A. two.
   B. three.
   C. four.
   D. five.

5. The position of your school building can be located

   A. by displacement from your house to school.
   B. with reference to the school name.
   C. by the distance between your house and school.
   D. with reference to a fixed point.

6. Which type of motion is taking place in the given figure?

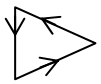
   A. Vibratory
   B. Random
   C. Circular
   D. Linear

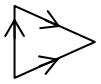


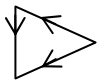
7. A ball is dropped from the top of a cliff. It takes two seconds to reach the ground, hence the height of the cliff is *(take $g = 10\ m/s^2$)*

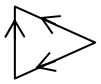
   A. 10 m.
   B. 20 m.
   C. 30 m.
   D. 40 m.

8. Which of the following vector diagrams shows that the sum of forces is zero?

   A. 

   B. 

   C. 

   D. 

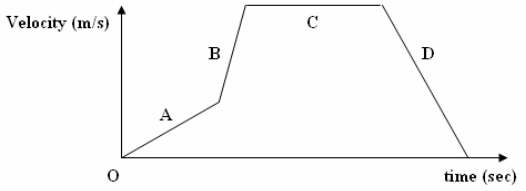
9. In any right angled triangle, the ratio between perpendicular and hypotaneous represents

   A. $\sin\theta$
   B. $\cos\theta$
   C. $\tan\theta$
   D. $\sec\theta$

10. If for a force (F), $F_x = 6N$ and $F_y = 6N$, then what is the angle between F and the x-axis?

    A. 45°
    B. 60°
    C. 75°
    D. 90°

11. There are four forces A, B, C and D acting on a body. State which force will produce a torque of minimum magnitude?

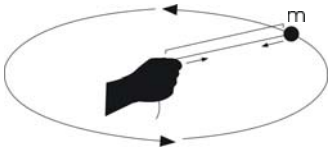


12. The centripetal force (F_c) of an object can be calculated by

A. mv^2/r
B. m^2v/r^2
C. m^2v/r
D. mv^2/r^2

13. A stone is rotating in a clock wise direction. If its contact with the centre breaks, then what will be the direction of motion of the stone?

A. Linear
B. Rotational
C. Vibrational
D. Circulatory



14. All of the following contain chemical energy EXCEPT

A. a battery
B. a candle
C. petrol
D. a bulb

15. Applying brakes changes kinetic energy into

A. potential energy.
B. radiated energy.
C. sound energy.
D. heat energy.

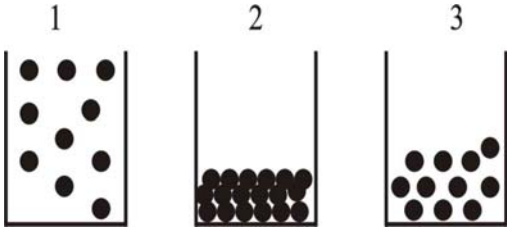
16. Which of the following is NOT measured in joules?

A. Energy
B. Power
C. Heat
D. Work

17. It is easier to turn a nut by using a spanner. The efficiency of a spanner depends upon its

A. large moment arm.
B. small moment arm.
C. more friction.
D. less friction.

18. In the given figures (1, 2 and 3) different states of matter are shown with reference to their particles. Identify the states of matter



	Solid	**Liquid**	**Gas**
A.	1	3	2
B.	2	3	1
C.	1	2	3
D.	3	2	1

19. According to the kinetic theory of matter, a particle moves most rapidly in

A. both liquid and gaseous state of matter.
B. only in gaseous state of matter.
C. only in liquid state of matter.
D. only in solid state of matter.

20. If two fluids are of different volume but the same temperature, then their molecules have the same

    A. heat energy.
    B. kinetic energy.
    C. potential energy.
    D. chemical energy.

21. The ventilators in buildings work on the principle of

    A. conduction.
    B. convection.
    C. momentum.
    D. pascal.

22. All ordinary liquids are poor conductors EXCEPT

    A. kerosene oil.
    B. mercury.
    C. glycerin.
    D. benzene.

23. 4200 joules of energy is needed to raise the temperature of 1 kg of water by

    A. +1 ºC
    B. -1 ºC
    C. +1 K
    D. -1 K

24. Liquid water expands when changed into ice. This is because

    A. water has maximum density at 4ºC.
    B. ice is at a lower temperature than water.
    C. ice is denser than water.
    D. volume and temperature do not affect each other.

25. What amount of coal needed to produce energy equal to the energy produced by 1kg of uranium?

    A. half a million kg.
    B. 1 million kg.
    C. 2 million kg.
    D. 3 million kg.

END OF PAPER

AGA KHAN UNIVERSITY EXAMINATION BOARD

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CLASS IX EXAMINATION 2010

Physics Paper I

Time allowed: 35 minutes Marks 25

INSTRUCTIONS

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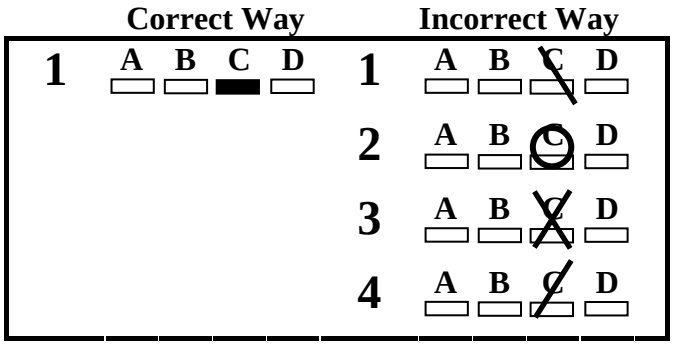


5. If you want to change your answer, ERASE the first answer completely with a rubber, before blacking out a new box.
6. DO NOT write anything in the answer grid. The computer only records what is in the boxes.
7. You may use a simple calculator if you wish.

1. The bottle in the given figure contains 5 litres of vegetable oil. The word 'litre' is a unit of

A. mass.
B. weight.
C. volume.
D. density.

2. The number of significant figures in 0.093827 is

A. two.
B. five.
C. six.
D. seven.

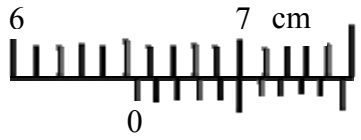
3. A metre rod has a diameter of 4.75 cm. Its value in metres is

A. $4.75\times10^{-3}\,m$
B. $4.75\times10^{-2}\,m$
C. $47.5\times10^{-2}\,m$
D. $457\times10^{-3}\,m$

4. If a resultant vector forms a 45^{o} angle with base, then the angle between the $\vec{F}_x$ and $\vec{F}_y$ components of the vector is

A. a right angle.
B. an acute angle.
C. a reflex angle.
D. an obtuse angle.

5. The diagram shows a part of a vernier caliper. What is the reading?



A. 6.50 cm
B. 6.55 cm
C. 7.45 cm
D. 7.50 cm

6. A ball of 2 kg takes 2 sec to reach the ground from a height of 100 m. What time will ball of 4 kg take if it is falling from the same height?

A. 2 sec.
B. 4 sec.
C. 8 sec.
D. 16 sec.

7. All of the following effects are due to the application of force EXCEPT

A. recoil of a gun.
B. acceleration of a car.
C. turning of a driving wheel.
D. thermal expansion of a rod.

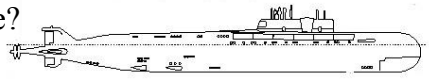
8. Which one of the following involves least friction?

A. Walking along a road.
B. Ski-ing down a snow slope.
C. Leaning a ladder against a wall.
D. brake blocks for a bicycle.

9. If a force of 20 N acts on a body, then its y-component is

A. 0
B. 1 N
C. 10 N
D. 20 N

10. A submarine sinks into water with a uniform speed of 2 m/s. What is the resultant force exerted on the submarine?



A. 0
B. 500 N
C. 2000 N
D. 10000 N

11. For greater stability a racing car should have

A. a rear engine.
B. a small chassis.
C. an oblong body.
D. a wide wheelbase.

12. The value of **g** at the Earth's poles is less than that at the equator because the distance between the

A. poles and equator is smaller.
B. poles and equator is greater.
C. poles and centre of the Earth is smaller.
D. equator and centre of the Earth is smaller.

13. The Earth and planets move around the Sun, due to a centripetal force which is provided by the gravitational force of the

A. Sun.
B. Earth.
C. Moon.
D. Planets.

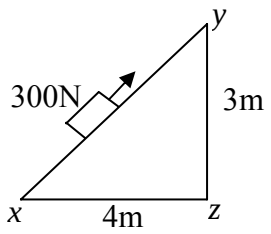
14. As the distance between the Earth and a body increases, the value of **g**

A. decreases.
B. becomes zero.
C. remains constant.
D. varies in an unpredictable manner.

15. The energy stored in a stretched string is

A. kinetic energy.
B. chemical energy.
C. elastic potential energy.
D. gravitational potential energy.

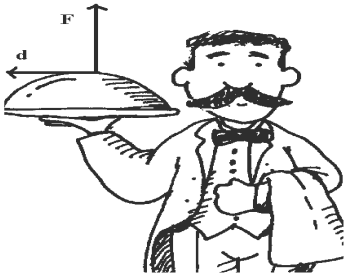
16.



A 300 N force is applied to a box in the direction of **y** in order to move it up. How much work is done?

A. 900 J
B. 1200 J
C. 1500 J
D. 30000 J

17. In the given picture calculate the work done by the waiter.

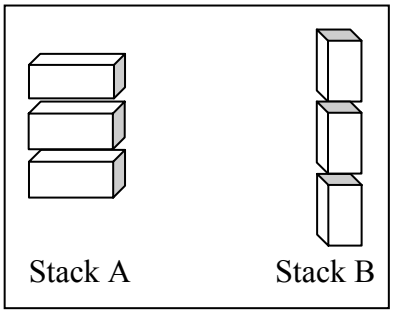


A. W = 0
B. W = F × d
C. W = –F × d
D. W = F × d Cosθ

18. A small box weighing 20 N and having an area of 0.1 m^2 stands on a floor. What is the pressure applied by the box to the floor?

A. 2.0 N/m^2
B. 19.9 N/m^2
C. 20.1 N/m^2
D. 200 N/m^2

19.



Which statement about the above figures is correct?

A. The force of stack A is greater than stack B.
B. The force of stack B is greater than stack A.
C. The pressure of stack A is greater than stack B.
D. The pressure of stack B is greater than stack A.

20. A drinking straw, a syringe and a vacuum cleaner all work on

A. Pascal's law.
B. pressure law.
C. Archimedes' principle.
D. atmospheric pressure.

21. If 4 kg of water cools from 80^{o}C to 30^{o}C, it loses

A. 840 J
B. 8400 J
C. 84000 J
D. 840000 J

22. In a clinical thermometer, mercury does not fall back to the bulb because

A. it is in a capillary tube.
B. it is small in quantity.
C. of the shape of the thermometer.
D. of the constriction in the tube.

23. A thermos flask has inner silver walls to reduce loss of heat by

A. radiation.
B. conduction.
C. convection.
D. evaporation.

24. All of the following are methods to prevent heat loss from houses in winter EXCEPT

A. tiled flooring.
B. carpeted floor.
C. double ceiling.
D. double glazed windows.

25. All of the following are included in the process of heat transfer EXCEPT

A. filtration.
B. radiation.
C. convection.
D. conduction.

END OF PAPER

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS IX EXAMINATION

MAY 2011

Physics Paper I

Time allowed: 35 minutes Marks 25

INSTRUCTIONS

1. Read each question carefully.

2. Answer the questions on the separate answer sheet provided. DO NOT write your answers on the question paper.

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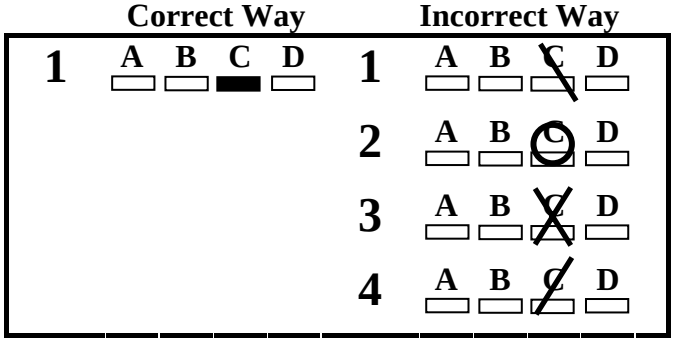
4. In each question there are four choices A, B, C, D. Choose ONE. On the answer grid black out the box for your choice with a pencil as shown below.

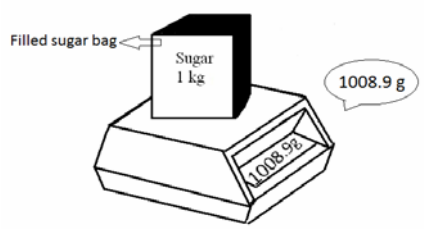


5. If you want to change your answer, ERASE the first answer completely with a rubber, before blacking out a new box.

6. DO NOT write anything in the answer grid. The computer only records what is in the boxes.

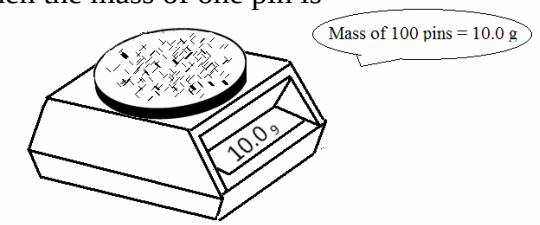
7. You may use a simple calculator if you wish.

1. The mass of the empty sugar bag in the given figure is



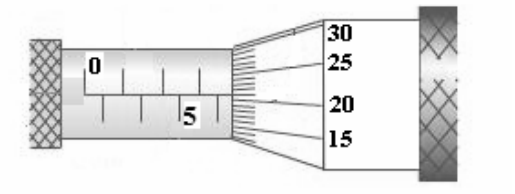
A. 8.9 g
B. 10 g
C. 100 g
D. 800 g

2. In the given figure, if all pins are of the same mass, then the mass of one pin is



A. 0.001 g
B. 0.01 g
C. 0.1 g
D. 1 g

3. If the least count of the given screw gauge is 0.001 cm, then the total reading will be



A. 0.00721 cm
B. 0.0721 cm
C. 0.721 cm
D. 7.21 cm

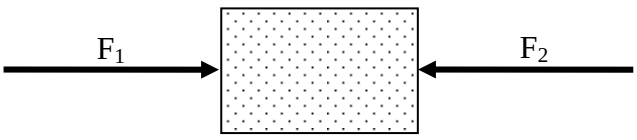
4. The opening and closing of a door is an example of

A. spin motion.
B. vibratory motion.
C. projectile motion.
D. translatory motion.

5. A free falling body is an example of

A. circular motion.
B. rotatory motion.
C. vibratory motion.
D. translatory motion.

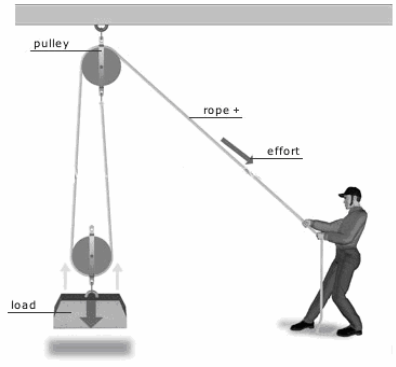
6. Two equal and opposite forces are acting on a body.



Which of the following quantities CAN NOT be zero in the above diagram?

A. Mass
B. Velocity
C. Momentum
D. Acceleration

7. A person supports a mass of 20 kg suspended by a rope. What is the resultant force acting on the mass?

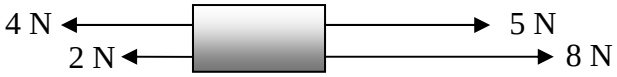


A. 0
B. 0.2 N
C. 2 N
D. 10 N

8. A force produces change in all of the following EXCEPT

A. mass.
B. shape.
C. speed.
D. length.

9. If four forces are acting on the body in the given diagram, then the magnitude of the resultant force will be

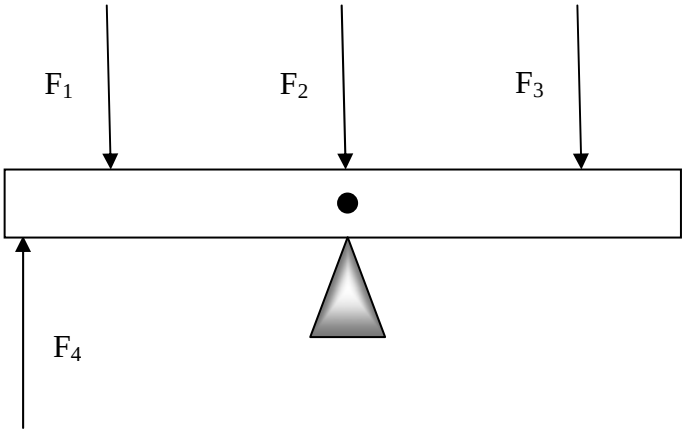


A. 1 N
B. 6 N
C. 7 N
D. 19 N

10. If a vector $\vec{A}$ has rectangular components $\vec{A}x = 4$ and $\vec{A}y = 4$, then the angle between vector $\vec{A}$ and *x axis* will be

A. 0º
B. 45º
C. 90º
D. 180º

11. Four different forces of the same magnitude are acting on the given meter scale. Which force is producing the maximum torque?



A. F_1
B. F_2
C. F_3
D. F_4

12. The necessary acceleration for a satellite orbiting the earth in provided by

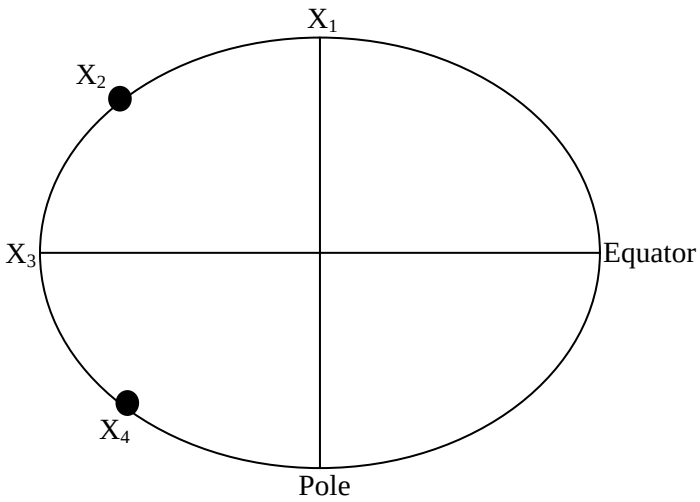
A. frictional force.
B. coulomb's force.
C. centrifugal force.
D. gravitational force.

13. If the mass of an object is 1 kg and the value of g is 10 m/sec^2, then the weight of the object will be

A. 1.0 N
B. 9.8 N
C. 10.0 N
D. 10.1 N

14. In the given diagram of Earth, the value of g will be least at

A. X_1
B. X_2
C. X_3
D. X_4



Earth

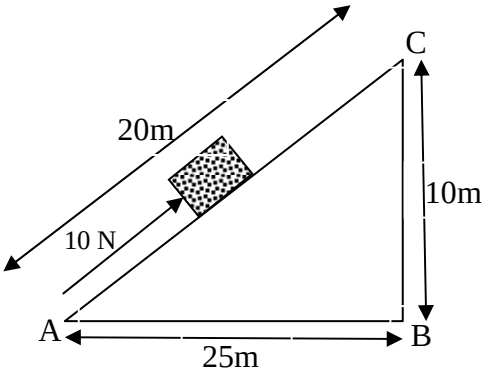
15. According to the data given in the table the work done by an object will be

Mass	Acceleration	Displacement
10 kg	2 m/s^2	3 m

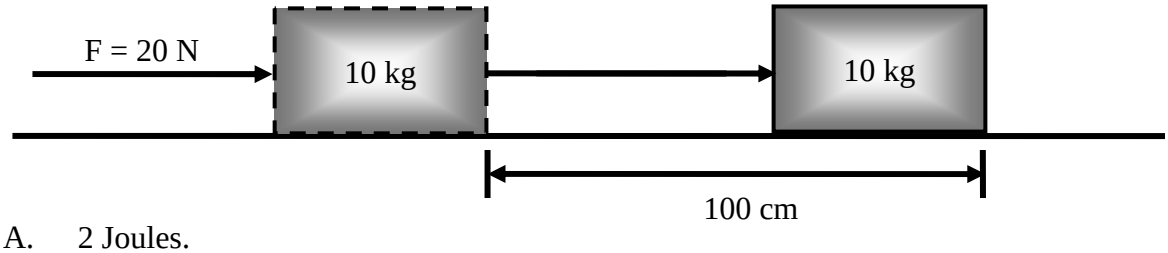
A. 5 J
B. 20 J
C. 40 J
D. 60 J

16. In the given diagram, if the block is moved from point *A* to point *C*, then the amount of work done will be

A. 100 J
B. 200 J
C. 250 J
D. 300 J

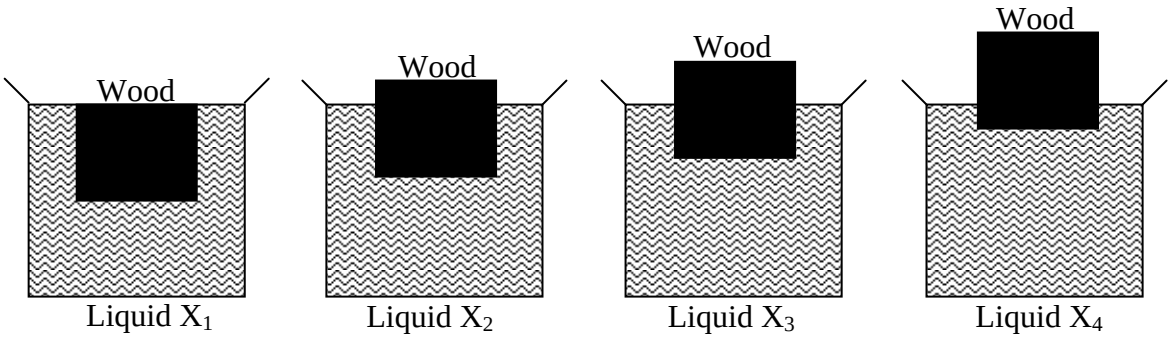


17. In the given diagram, the amount of work done by the object is



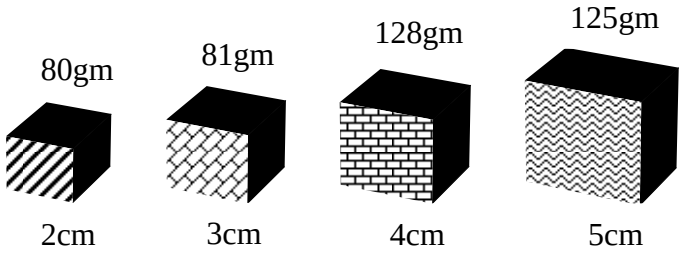
A. 2 Joules.
B. 20 Joules.
C. 200 Joules.
D. 2000 Joules.

18. A piece of wood is shown floating in four different liquids. Which liquid is denser than the others?



A. X_1
B. X_2
C. X_3
D. X_4

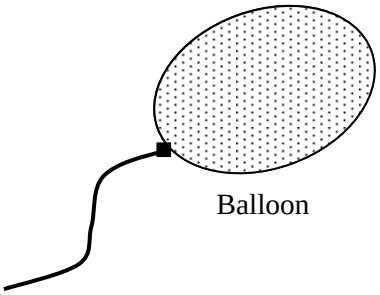
19. Which of the following cubes has the maximum density?



(A) (B) (C) (D)

20. If a sealed balloon, filled with a constant quantity of gas, is cooled down, then how will the listed properties of the gas behave?

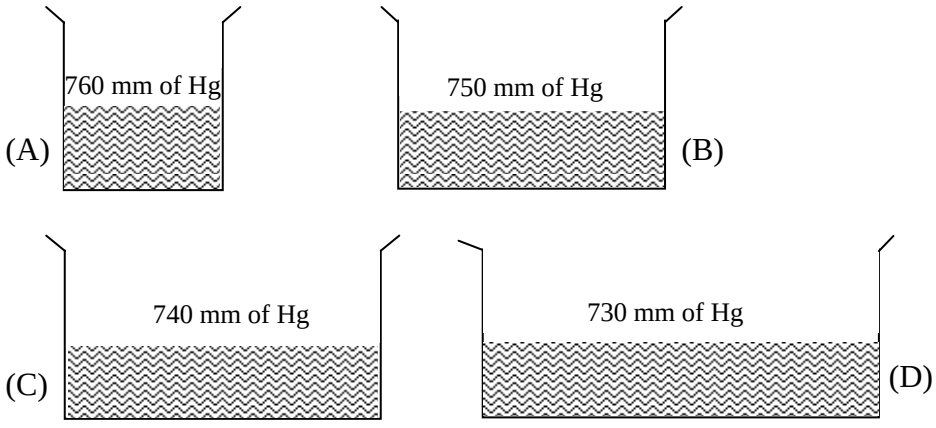
	Mass	Volume	Density
A	decreases	stays the same	increases
B	increases	stays the same	decreases
C	stays the same	decreases	increases
D	stays the same	increases	decreases



21. Absolute zero is the temperature at which the molecules of a body have

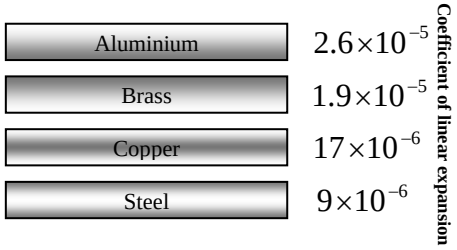
A. zero energy.
B. kinetic energy only.
C. potential energy only.
D. both kinetic energy and potential energy.

22. If the same quantity and same nature of liquids are present in the given vessels, then in which vessel will the liquid evaporate fastest?



23. If four metallic rods of the same length are heated equally, which will expand more?

A. Aluminium
B. Brass
C. Copper
D. Steel



24. A bimetallic thermostat is used to maintain temperature. On which of the following principles does it work?

A. Thermal radiation
B. Thermal expansion
C. Thermal convection
D. Thermal conductivity

25. Which of the following characteristics should be present in a surface to protect it from infrared radiation?

A. Poor absorbers and poor emitters
B. Poor absorbers and good emitters
C. Good absorbers and poor emitters
D. Good absorbers and good emitters

END OF PAPER

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS IX EXAMINATION

MAY 2012

Physics Paper I

Time allowed: 35 minutes Marks 25

INSTRUCTIONS

1. Read each question carefully.
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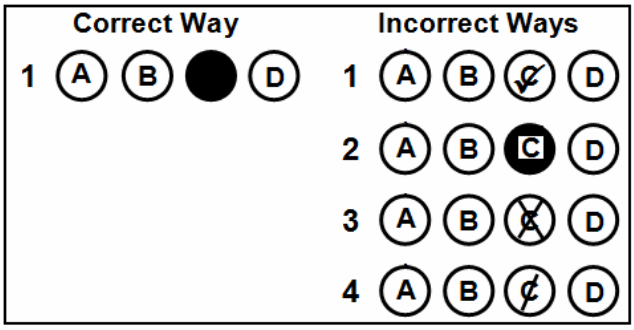

Candidate's Signature

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6. DO NOT write anything in the answer grid. The computer only records what is in the circles.
7. You may use a simple calculator if you wish.

1. Which of the following sets represents fundamental quantities?

Set 1	Set 2	Set 3	Set 4
Energy	Current	Current	Length
Length	Heat	Mass	Mass
Mass	Mass	Time	Temperature
Weight	Velocity	Voltage	Time

A. Set 1
B. Set 2
C. Set 3
D. Set 4

2. Which of the following physical quantities is measured by using a micrometer screw gauge?

A. Time
B. Weight
C. Current
D. Diameter

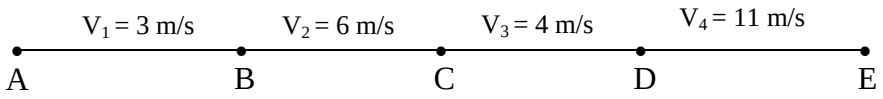
3. Which of the following instruments is used to measure the internal diameter of a pipe with a single measurement?

A. Manometer
B. Screw gauge
C. Vernier callipers
D. Measuring cylinder

4. If a body is falling freely, its motion will be

A. linear.
B. random.
C. periodic.
D. vibratory.

5. The average velocity from A to E in the given diagram is



A. 3 m/s
B. 4 m/s
C. 6 m/s
D. 12 m/s

6. Inertia of a body depends upon its

   A. time.
   B. mass.
   C. length.
   D. temperature.

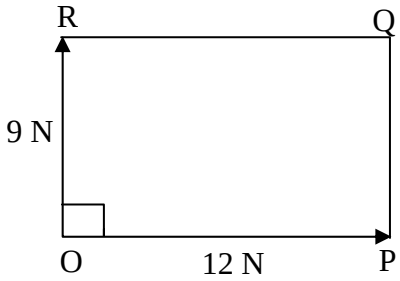
7. If a body of mass 2 kg is moving with an acceleration of 5 m/s^2, then the net force exerted on the body is

   A. 7 N
   B. 10 N
   C. 15 N
   D. 20 N

8. Which of the following statements correctly describes the mass of an object?

   A. The pull of gravitational force on the object.
   B. The amount of space taken up by the object.
   C. The material from which the object is made.
   D. The amount of substance the object contains.

9. Two forces act at the right angle at point O, as shown in the given figure. What will be the magnitude and direction of the resultant force?



	Magnitude	Direction
A	15 N	along $\overrightarrow{OQ}$
B	15 N	along $\overrightarrow{PR}$
C	21 N	along $\overrightarrow{OQ}$
D	21 N	along $\overrightarrow{PR}$

10. It is better to use a long spanner rather than a short one to tighten a nut because

    A. it offers more friction.
    B. it requires less turning effect.
    C. more work is done by the user.
    D. it requires less force to be exerted.

11. Some books are placed in four bookcases as shown in the given diagram. Which of the following shelves is most likely to fall forward if pulled a little?

Shelf A Shelf B Shelf C Shelf D

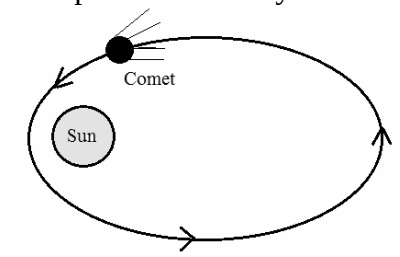
12. The weight of an object on the surface of the moon is

    A. zero.
    B. equal to that on the surface of the earth.
    C. less than that on the surface of the earth.
    D. more than that on the surface of the earth.

13. If the mass of the earth is 6×10^{24} kg, its radius is 6.4×10^{6} m and the value of gravitational constant is 6.67×10^{-11} Nm^2 / kg^2, then the value of gravitational force acting on a 1.00 kg object will be

    A. 8.8 N
    B. 9.8 N
    C. 10.8 N
    D. 11.8 N

14. The given diagram shows the path followed by a comet when it reaches close to the sun. The shape of the path is



    A. elliptical.
    B. spherical.
    C. parabolic.
    D. hyperbolic.

15. Which of the following is produced after a force is applied and work is done on a body?

    A. Density
    B. Displacement
    C. Increased mass
    D. Decreased weight

16. If a force of 2 N acts on a body through a distance of 3 m in the direction of force, then the work done will be

    A. 1 J.
    B. 5 J.
    C. 6 J.
    D. 8 J.

17. A rock of mass 20 kg is travelling in space at a speed of 6 m/s. What will be its kinetic energy?

    A. 60 J
    B. 120 J
    C. 360 J
    D. 720 J

18. If all of the following objects are moving with the same speed, then which one has the highest kinetic energy?

    A. A car
    B. A bus
    C. A bullet
    D. A football

19. On a frozen lake, the ice will break if the pressure exerted on it will become greater than 1.0 N / cm^2. If four boys are standing on the ice, which of the following will fall through?

	Weight of Boy	**Area of Feet**
A	200 N	270 cm^2
B	300 N	250 cm^2
C	400 N	500 cm^2
D	500 N	560 cm^2

20. Which of the following is least likely to sink into soft ground?

    A. Empty lorry with six wheels
    B. Loaded lorry with six wheels
    C. Empty lorry with four wheels
    D. Loaded lorry with four wheels

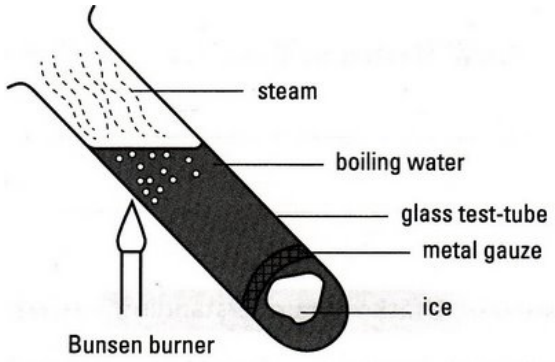
21. Average kinetic energy of the molecules of a substance is called

    A. heat.
    B. entropy.
    C. temperature.
    D. heat capacity.

22. Heat absorbed by a cold body is equal to the heat released by a hot body. This law is known as

    A. Boyle's law.
    B. Charles' law.
    C. Avogadro's law.
    D. law of heat exchange.

23. An experiment is carried out as shown in the given diagram.



The ice takes a long time to melt, even though the water at the top of the tube is boiling because

A. ice is a poor conductor of heat.
B. water is a poor conductor of heat.
C. convection cannot occur in water.
D. the gauze prevents the energy reaching the ice.

24. Sometimes fans and pumps are used to speed up the natural convection. This convection is known as

A. fast convection.
B. usual convection.
C. forced convection.
D. unnatural convection.

25. All of the following are factors on which rate of energy transfer from one body to another depends EXCEPT

A. surface area.
B. surface temperature.
C. colour of the surface.
D. pressure on the surface.

END OF PAPER

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS IX EXAMINATION

MAY 2013

Physics Paper I

Time: 35 minutes Marks: 25

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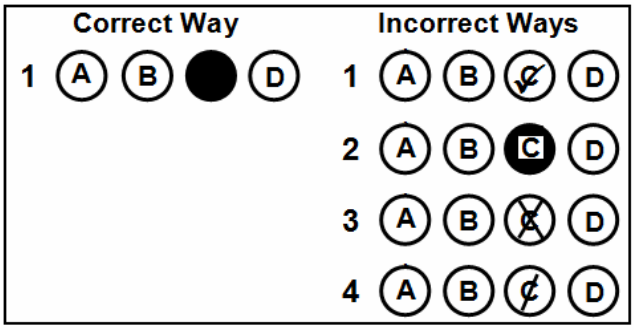

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7. You may use a simple calculator if you wish.

1. Which of the following pairs of units is an example of S.I Units?

   A. Metre and Celsius
   B. Metre and Kelvin
   C. Gram and Celsius
   D. Gram and Kelvin

2. Which of the following instruments is used to measure the internal diameter of a pipe?

   A. Meter rule
   B. Screw gauge
   C. Vernier calipers
   D. Measuring cylinder

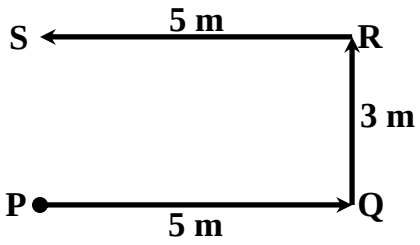
3. The number of significant figures in 204.600 is

   A. 2
   B. 3
   C. 4
   D. 6

4. In which of the following types of motion do particles of a body have the same motion?

   A. Random
   B. Rotatory
   C. Vibratory
   D. Translatory

5. The magnitude of displacement from point **P** to **S** is



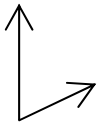
   A. 3 m.
   B. 5 m.
   C. 8 m.
   D. 13 m.

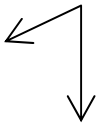
6. If a truck covers 360 m in 5 sec, its speed will be

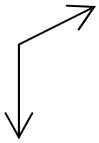
   A. 62 m/sec.
   B. 72 m/sec.
   C. 82 m/sec.
   D. 92 m/sec.

7. The given diagram represents a player kicking a football in the forward direction.

If air friction is present, then which of the following options shows the direction of forces acting on the football during the motion?

A. 

B. 

C. 

D. 

8. "Force always acts in two ways; it acts equal and opposite ways." Which of the following laws represents the above statement?

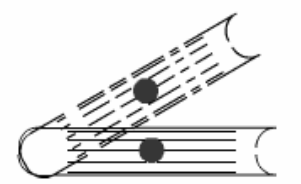
A. Newton's first law of motion
B. Newton's third law of motion
C. Law of conservation of energy
D. Law of conservation of momentum

9. A spanner is used to tighten a screw. If the torque is zero, then the applied force will be

A. at an angle of 45° with the moment arm.
B. at an angle of 270° with the moment arm.
C. in the same direction as that of the moment arm.
D. in the perpendicular direction with the moment arm.

10. The given diagram represents that the book is in the state of

A. static equilibrium.
B. stable equilibrium.
C. neutral equilibrium.
D. unstable equilibrium.



11. The stability of every body depends on the position of the centre of

    A. mass.
    B. a body.
    C. gravity.
    D. a surface.

12. If we move from the ground to the top of a mountain, then the value of ‘g’ will

    A. increase.
    B. decrease.
    C. remain same.
    D. become zero.

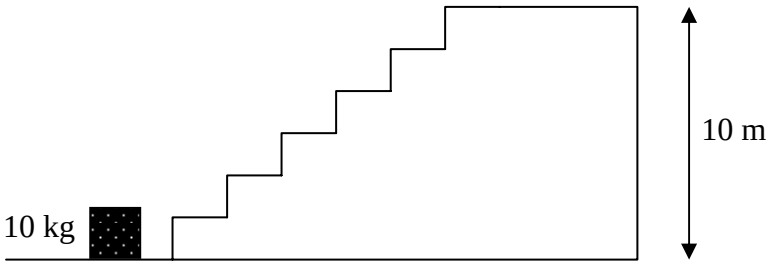
13. If there is no gravitational force of earth, then all satellites would

    A. be at rest.
    B. orbit in a circle.
    C. fall on the earth.
    D. escape from the earth’s attraction.

14. When billions of stars are held together by the force of gravity, they form a

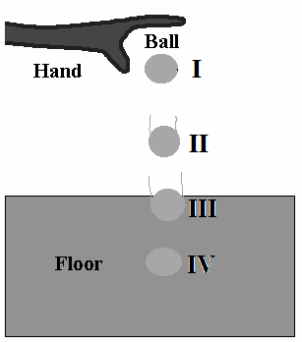
    A. comet.
    B. cluster.
    C. nebula.
    D. galaxy.

15. In the given figure, if a block is shifted from lower to higher position, then how much work will be done?



    A. 10 J
    B. 20 J
    C. 100 J
    D. 1000 J

16. A metallic ball is dropped from a height as shown in the given figure. Neglecting the air resistance, the total energy of the ball will be



A. maximum at I and II only.
B. maximum at II and III only.
C. same at II and III only.
D. same at all positions.

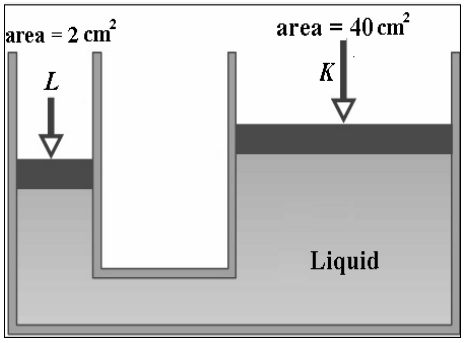
17. Which of the following options represents the energy changes taking place in a fossil fuel power station?

A. Heat → light → electrical
B. Heat → kinetic → electrical
C. Heat → chemical → electrical
D. Kinetic → electrical → potential

18. Gases are composed of large number of particles. Which of the following types of motion is performed by a gas particles?

A. Linear
B. Circular
C. Random
D. Vibratory

19. The system shown in the given diagram contains an incompressible liquid. A downward force of 80 N is exerted on the piston *K*.



What will be the upward force on piston *L*?

A. 1 N
B. 4 N
C. 80 N
D. 1600 N

20. Force acting on unit area of an object is called

A. strain.
B. stress.
C. viscosity.
D. elasticity.

21. The bulb in the clinical thermometer is made of thin glass so that

    A. the digits can be read easily.
    B. mercury can be seen clearly.
    C. the patient can feel it light in weight.
    D. mercury responds quickly to changes in temperature.

22. The process of conversion of a liquid into gaseous state at room temperature is called

    A. boiling.
    B. convection.
    C. evaporation.
    D. condensation.

23. Equal volumes of copper metal, water and air were heated equally. Which of the following options shows the correct sequence of the increasing order of expansion?

    A. Copper, water, air
    B. Water, air, copper
    C. Air, copper, water
    D. Air, water, copper

24. The process of heat transfer by collision of molecules in solids is called

    A. radiation.
    B. convection.
    C. conduction.
    D. evaporation.

25. Which of the following is TRUE about the requirement of medium in the three processes of heat transfer?

	Material where Medium is Required	**Material where Medium is NOT Required**
A	Conduction	Convection
B	Convection	Conduction
C	Conduction	Radiation
D	Radiation	Conduction

END OF PAPER

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS IX EXAMINATION

MAY 2014

Physics Paper I

Time: 35 minutes Marks: 25

INSTRUCTIONS

1. Read each question carefully.
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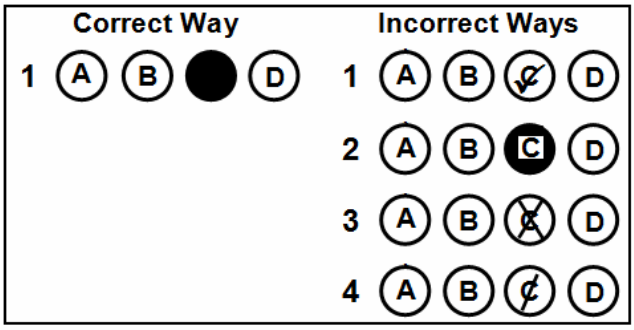

Candidate's Signature

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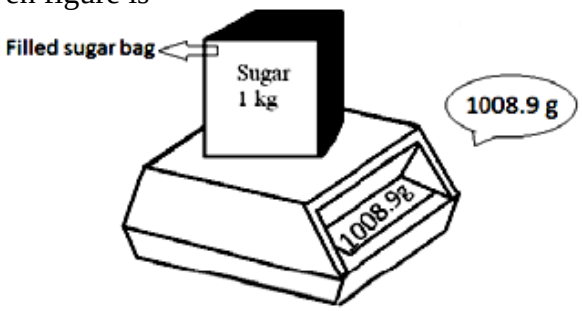
6. DO NOT write anything in the answer grid. The computer only records what is in the circles.
7. You may use a simple calculator if you wish.

1. Which of the following is the CORRECT number of significant figures and the standard form of a radius 0.0340 cm?

	Significant Figures	Standard Form
A	3	3.4×10^{-3} cm
B	3	3.40×10^{-2} cm
C	4	3.4×10^{-3} cm
D	4	3.4×10^{-2} cm

2. The mass of the empty sugar container in the given figure is

A. 8.9 g
B. 10 g
C. 100 g
D. 800 g



3. All of the following describe the role of physics in technology EXCEPT

A. the use of vaccine.
B. the use of internet.
C. the use of electronics.
D. the use of measuring instruments.

4. When an object of mass 2 kg is dropped from a 125 m high building, then it will reach the ground in (where g = 10 m/s^2)

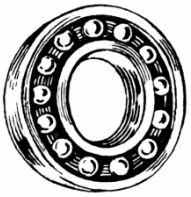
A. 5 s.
B. 10 s.
C. 20 s.
D. 40 s.

5. If a car travels at an average speed of 80 m/s in a race and covers a distance of 640,000 m, then the time taken by the car will be

A. 800 s
B. 8,000 s
C. 6,400,000 s
D. 51,200,000 s

6. Ball bearings are used in a variety of light and heavy machineries because they have small

A. size.
B. mass.
C. shape.
D. area in contact.



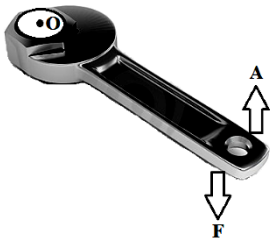
7. An object is moving with a uniform speed in a circle. If the radius of the path is doubled, then the centripetal force will

   A. reduce to half.
   B. become double.
   C. remain the same.
   D. reduce four times.

8. Two spheres **A** and **B** are dropped from the same height. If sphere **B** has a mass three times greater than sphere **A**, then which of the following statements CORRECTLY describes this situation?

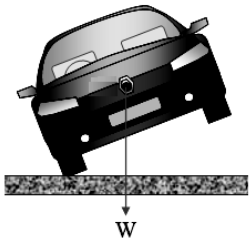
   A. Sphere **B** falls faster.
   B. Sphere **A** has more momentum.
   C. Sphere **B** has more momentum.
   D. Both spheres have the same momentum.

9. If a person is tightening a bolt by applying a force of 10 N at point 0.8 m from point **O**, then the turning effect of this force will be



   A. 8.0 Nm
   B. 9.2 Nm
   C. 10.8 Nm
   D. 12.5 Nm

10. When a car is tilted from the ground, then the center of gravity will

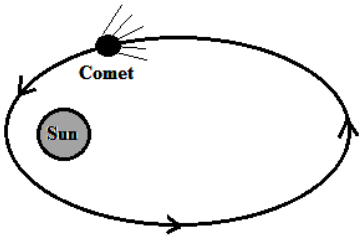


   A. remain the same.
   B. be lowered.
   C. be toppled.
   D. be raised.

11. Which of the following actions does NOT make use of the turning effect of a force?

   A. Tightening a tap
   B. Releasing a nut with a spanner
   C. Dabbing paint with a paint brush
   D. Picking up an ice cube with an ice tong

12. The given diagram shows the path followed by a comet when it reaches close to the sun. The shape of the path is



   A. elliptical.
   B. spherical.
   C. parabolic.
   D. hyperbolic.

13. If the mass of the earth is 6×10^{24} kg, its radius is 6.4×10^{6} m and the value of gravitational constant is 6.67×10^{-11} Nm^2 / kg^2, then the value of gravitational force acting on a 1.00 kg object when it is placed on surface of earth will be

A. 8.8 N
B. 9.8 N
C. 10.8 N
D. 11.8 N

14. The necessary acceleration for a satellite orbiting the earth is provided by

A. frictional force.
B. coulomb's force.
C. centrifugal force.
D. gravitational force.

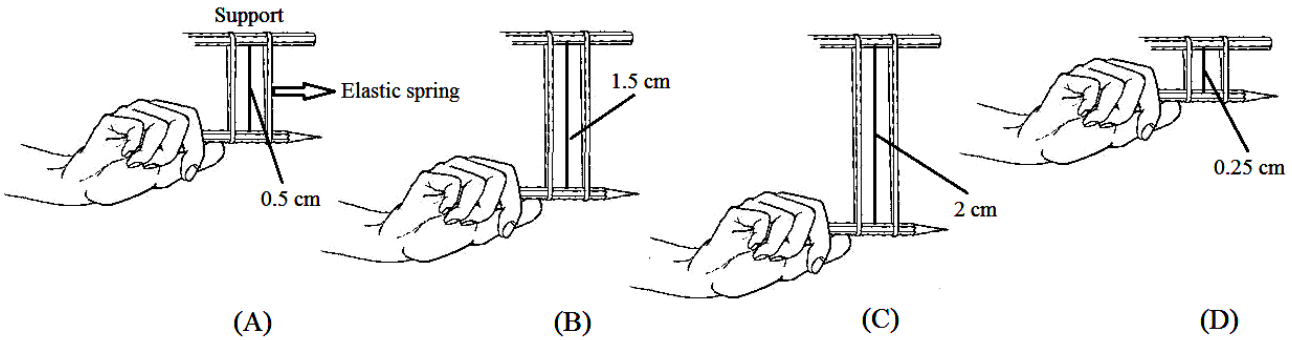
15. On which of the following factors does the pressure inside a liquid depend?

A. Force and area
B. Depth and force
C. Density and depth
D. Upthrust and density

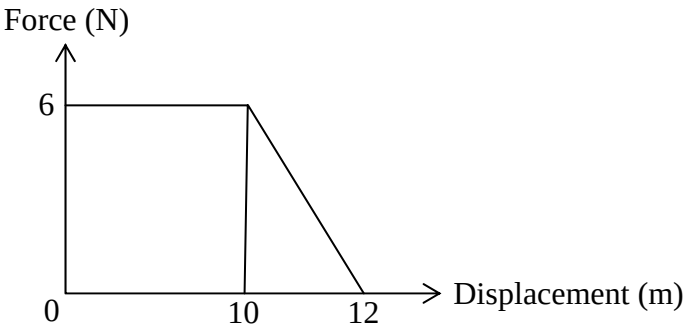
16. If a spring is stretched by hanging a piece of metal from it, then the energy stored in the spring will be

A. mechanical energy.
B. gravitational energy.
C. elastic potential energy.
D. chemical potential energy.

17. In which of the following figures, does the elastic spring have the greatest elastic potential energy?



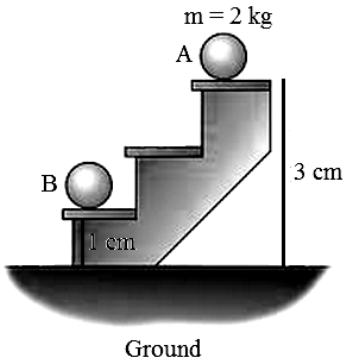
18. The given graph shows force **F** acting on a moving object.



What will be the work done on the body during its displacement of 12 m?

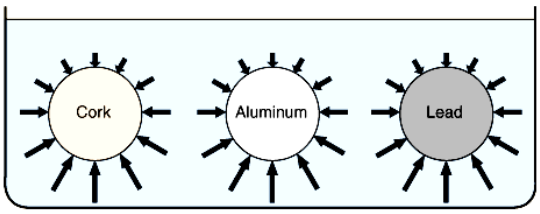
A. 36 J
B. 48 J
C. 66 J
D. 72 J

19. A ball of mass 2 kg is moving up from point **B** to point **A**. Its potential energy at point **A** with respect to the ground will be



A. 0.1 J
B. 0.2 J
C. 0.6 J
D. 0.8 J

20. Three balls of the same diameter are immersed in water completely. Which of the following is TRUE about the upthrust exerted by water on the balls?



A. All balls have the same upthrust.
B. Cork ball has maximum upthrust.
C. Lead ball has maximum upthrust.
D. Aluminum ball has maximum upthrust.

21. People feel cool when they do not dry themselves after swimming because water

    A. is colder than air.
    B. is a good conductor of heat.
    C. evaporates and causes cooling.
    D. insulates them from the warm air.

22. If the temperature of a chicken pizza is 75°C, then its temperature in Fahrenheit scale will be

    A. 23.89°F
    B. 73.69°F
    C. 167°F
    D. 348°F

23. In which direction will a bimetallic strip bend if the upper metal has a smaller and lower has a greater rate of thermal expansion?

    A. Upward
    B. Forward
    C. Backward
    D. Downward

24. When a saucepan is placed on a burning stove, heat is transferred to liquid inside the saucepan by

    A. radiation.
    B. convection.
    C. sublimation.
    D. evaporation.

25. Heat is transferred from one body to another body due to the difference in their

    A. latent heat.
    B. temperature.
    C. specific heat.
    D. nature of substance.

END OF PAPER

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS IX EXAMINATION

MAY 2015

Physics Paper I

Time: 35 minutes Marks: 25

INSTRUCTIONS

1. Read each question carefully.
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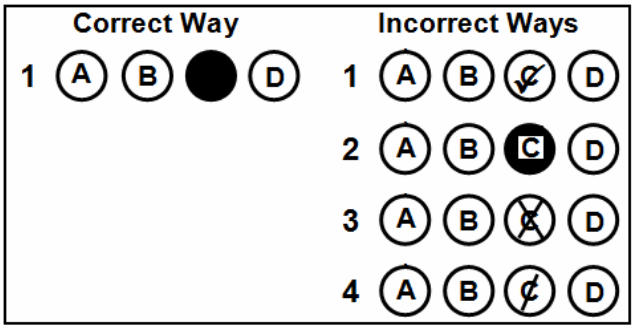

Candidate's Signature

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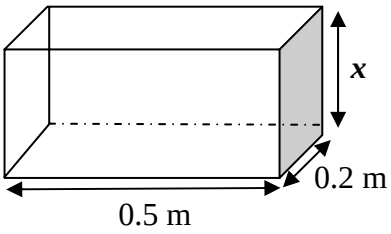
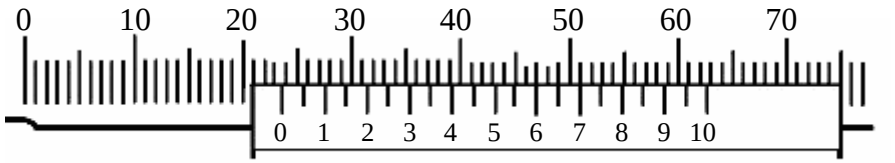
6. DO NOT write anything in the answer grid. The computer only records what is in the circles.
7. You may use a simple calculator if you wish.

1. If the volume of the given cuboid is 0.03 m^3, then the value of ***x*** will be



A. 0.1 m
B. 0.2 m
C. 0.3 m
D. 0.5 m

2. In the given diagram showing part of a Vernier calliper the Vernier scale reading is

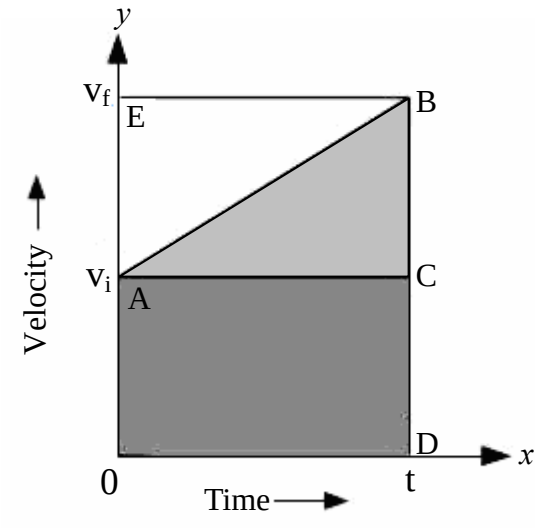


A. 0.06 mm
B. 0.6 mm
C. 6 mm
D. 60 mm

3. Which of the following is the most accurate instrument for measuring length?

A. Meter rule
B. Screw gauge
C. Measuring tape
D. Vernier calliper

4. The below given picture shows the velocity-time graph for the motion of a body.



The slope of the line segment AB in the above graph shows the

A. acceleration.
B. displacement of the body.
C. total distance covered by the body.
D. total time taken for the motion of the body.

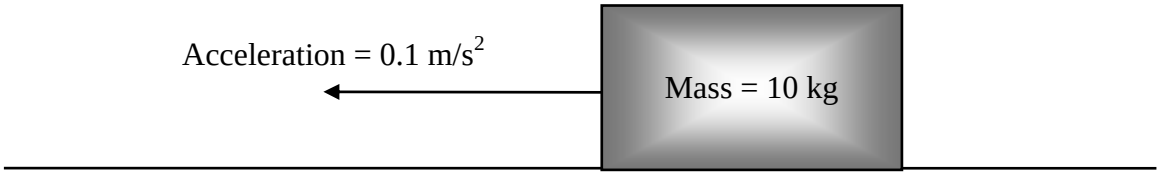
5. Which of the following is NOT a vector quantity?

   A. Power
   B. Torque
   C. Tension
   D. Momentum

6. The distance covered in unit time is known as

   A. speed.
   B. velocity.
   C. gravitation.
   D. acceleration.

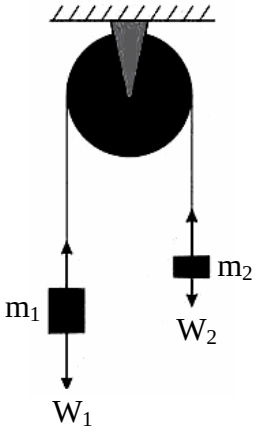
7. The value of the acting force in the given diagram is



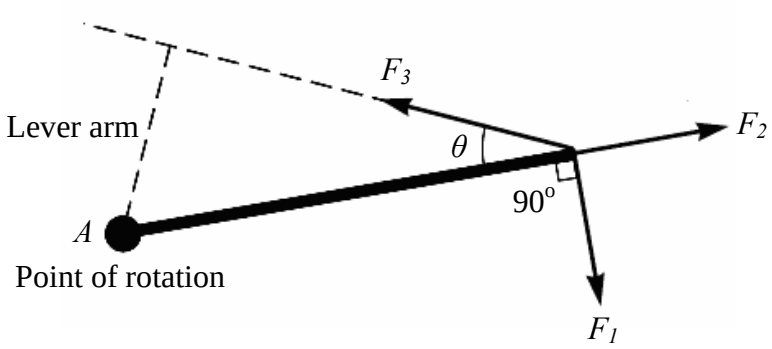
   A. 1 N
   B. 10 N
   C. 100 N
   D. 1000 N

8. If $W_1 > W_2$ in the given pulley then which of the following options must be TRUE for the direction of the acceleration for m_1 and m_2?

	Acceleration of m_1	**Acceleration of m_2**
A	downward	downward
B	upward	upward
C	downward	upward
D	upward	downward

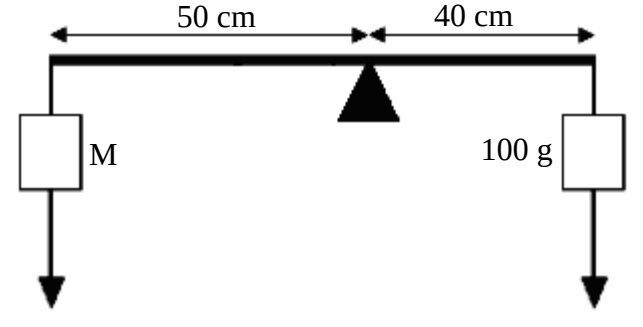


9. If all three forces F_1, F_2 and F_3 are equal in magnitude then which of the following force/s would individually produce zero torque about A?



A. F_1 only
B. F_2 only
C. F_3 only
D. F_2 and F_3

10. A meter rule is pivoted as shown in the given figure. In order to balance the meter rule, the value of mass M should be



A. 80 g
B. 100 g
C. 150 g
D. 220 g

11. The rotational effect of forces is called

A. velocity.
B. moment.
C. momentum.
D. acceleration.

12. The weight of an object on the Earth is the result of the gravitational field of attraction between the

A. Sun and the object.
B. Earth and the Moon.
C. Earth and the object.
D. Moon and the object.

13. Which of the following correctly describes the variation of gravity (g) with altitude?

    A. It is directly proportional to the distance from the centre of earth.
    B. It is inversely proportional to the distance from the centre of earth.
    C. It is directly proportional to the square of the distance from the centre of earth.
    D. It is inversely proportional to the square of the distance from the centre of earth.

14. Planets revolve around the Sun due to a

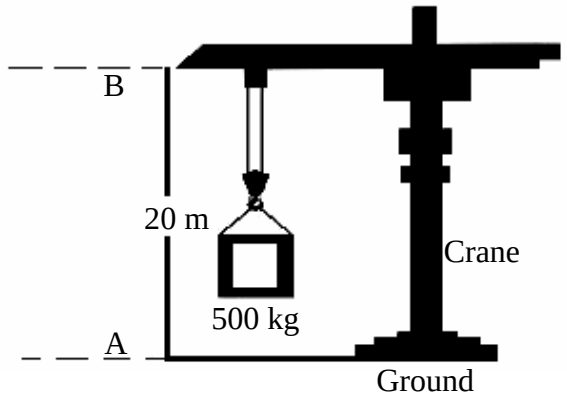
    A. frictional force.
    B. cohesive force.
    C. electrostatic force.
    D. gravitational force.

15. When a spring is compressed, it possesses

    A. heat energy.
    B. sound energy.
    C. kinetic energy.
    D. elastic potential energy.

16. In the given figure a crane is lifting a load of 500 kg from the position A to B and the value of acceleration due to gravity is 9.8 m/s^2. The work done by the crane is

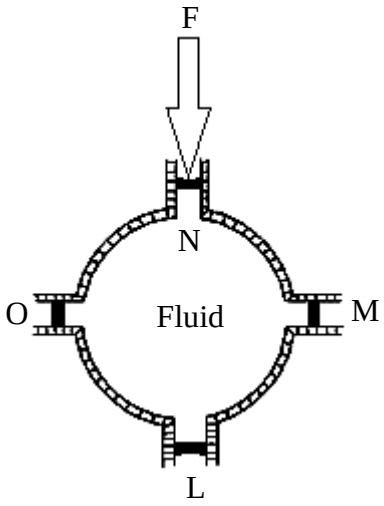
    A. 2.5 J
    B. 245 J
    C. 1020 J
    D. 98000 J



17. The energy possessed by a body by virtue of its motion is called

    A. heat energy.
    B. kinetic energy.
    C. potential energy.
    D. electrical energy.

18. A fluid vessel having equal sized holes at L, M, N and O are shown in the given diagram.



If a piston is pushed with a force F at N then the increase in pressure transmitted by the fluid will be

A. greatest at L.
B. greatest at M.
C. greatest at O.
D. same at L, M and O.

19. Which of the following is used to determine the density of an object?

A. Hooke's law
B. Pascal's law
C. Archimedes principle
D. Principle of moments

20. All of the following statements are the features of the kinetic molecular theory of matter EXCEPT

A. molecules attract each other.
B. matter is made up of molecules.
C. molecules remain in continuous motion.
D. pressure becomes zero when molecules collide with each other.

21. A thermometric liquid should have the following properties.

	Freezing Point	**Boiling Point**
A	low	high
B	low	low
C	high	high
D	high	low

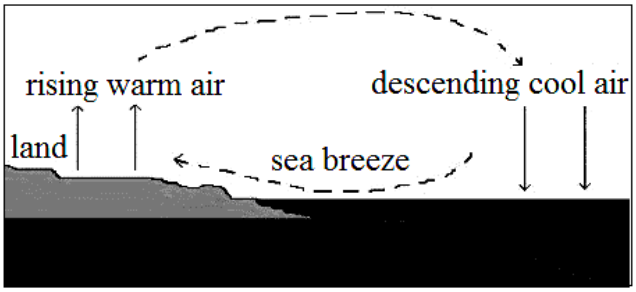
22. Which of the following is the only similarity between evaporation and boiling?

A. Both processes take place within the solid.
B. In both processes temperature remains constant.
C. In both processes bubbles are formed in the liquid.
D. Both processes involve change of state of liquid into vapour.

23. The transfer of energy from a hot object to a cold object is called

A. heat.
B. evaporation.
C. temperature.
D. internal energy.

24. The flow of cool air from the sea towards the land produces a sea breeze as shown in the below diagram.



The sea and land breezes are the result of

A. radiation.
B. convection.
C. conduction.
D. evaporation.

25. Wearing a white uniform keeps a student cool when the weather is hot. It is because the white colour is

A. dull and dark.
B. shiny and bright.
C. a good absorber of heat.
D. a good reflector of radiation.

END OF PAPER

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS IX EXAMINATION

MAY 2016

Physics Paper I

Time: 35 minutes Marks: 25

INSTRUCTIONS

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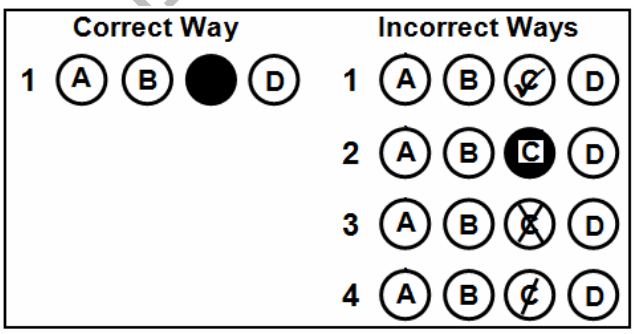

Candidate's Signature

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6. DO NOT write anything in the answer grid. The computer only records what is in the circles.
7. You may use a simple calculator if you wish.

1. The number of significant figures in 204.600 is

   A. 2
   B. 3
   C. 4
   D. 6

2. All of the following quantities can be measured by using a vernier callipers EXCEPT

   A. depth.
   B. length.
   C. weight.
   D. diameter.

3. The number of significant figures in 0.002016 is

   A. 3
   B. 4
   C. 6
   D. 7

4. The type of motion in a simple pendulum is

   A. rotatory.
   B. vibratory.
   C. translatory.
   D. circulatory.

5. In a classroom, a student gets up from his desk and walks 5 metre ahead to his friend's desk, collects a book and walks 5 metre back to his own desk.

   The total displacement of the student will be

   A. 0 metre.
   B. 5 metre.
   C. 10 metre.
   D. 20 metre.

6. If the momentum of a body changes from 20 Ns to 30 Ns in 5 s, then the average force acting on that body will be

   A. 2 N
   B. 10 N
   C. 50 N
   D. 120 N

7. In an elastic collision, which of the following also remains conserved along with momentum?

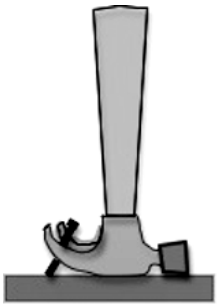
   A. Heat energy
   B. Sound energy
   C. Kinetic energy
   D. Potential energy

8. An astronaut is sitting in a spaceship on the Earth, ready to depart to the moon.

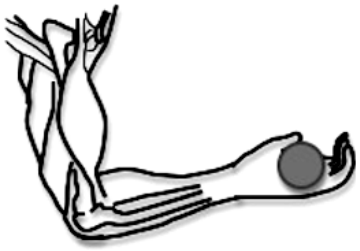
   When the astronaut reaches the moon, his weight and mass will

	Weight	Mass
A	increase	remain same
B	remain same	increase
C	decrease	remain same
D	remain same	decrease

9. All of the following are the examples of turning effect of force EXCEPT



A



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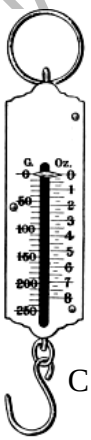

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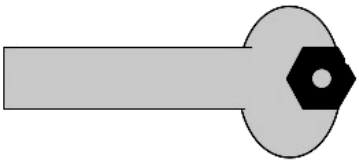
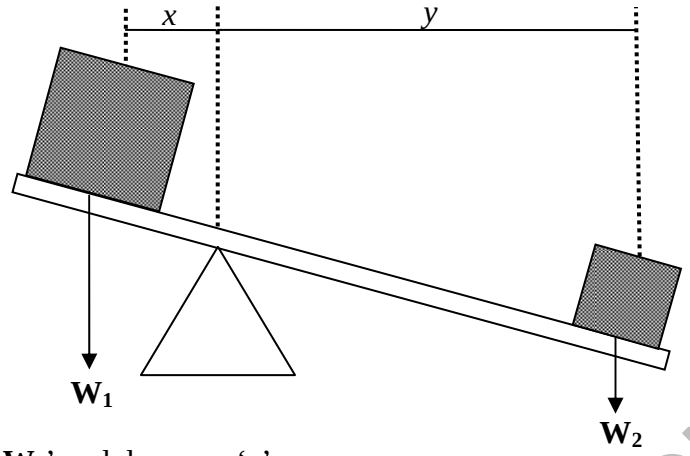


D

10. A body is said to be in dynamic equilibrium when it is moving with

    A. variable velocity.
    B. uniform velocity.
    C. variable acceleration.
    D. uniform acceleration.

11. In the given diagram, two weights '$\mathbf{W_1}$' and '$\mathbf{W_2}$' are placed on a rod whereas ($\mathbf{W_1}$>$\mathbf{W_2}$). For keeping the rod in the equilibrium position, than



I. increase '$\mathbf{W_2}$' and decrease '*x*'.
II. increase '$\mathbf{W_2}$' and '*x*' remain same.
III. increase '*x*' and '$\mathbf{W_2}$' remain the same.

A. I only
B. III only
C. I and II
D. II and III

12. The weight of an object at the centre of the Earth is

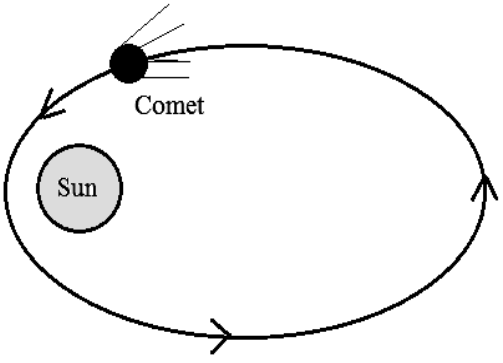
A. zero.
B. infinite.
C. half as on the surface of Earth.
D. same as on the surface of Earth.

13. If the radius of the Earth decreases and its mass remains the same, then the acceleration due to gravity on the surface of the Earth

A. increases.
B. decreases.
C. becomes zero.
D. remains the same.

14. The given diagram shows the path followed by a comet when it reaches close to the sun. The shape of the path is

A. elliptical.
B. spherical.
C. parabolic.
D. hyperbolic.



15. The energy possessed by a body due to its motion is called

    A. heat energy.
    B. light energy.
    C. kinetic energy.
    D. potential energy.

16. If the velocity of a body is doubled, then the kinetic energy of that body will

    A. reduce to half.
    B. increase to double.
    C. reduce to a quarter.
    D. increase to four times.

17. If the mass of an elevator is 2000 kg, then the work done to raise the elevator to a height of 50 m in 20 seconds will be

    (Take 'g' = 10 m/s^2)

    A. 4 J
    B. 400 J
    C. 20,000 J
    D. 1,000,000 J

18. If a gas is compressed, then the pressure exerted by gas molecules will

    A. increase.
    B. decrease.
    C. become zero.
    D. remain the same.

19. The height of Tarbela dam is 143 m.

    Assuming that the dam is filled with water and the density of water is 1000 kg/m^3. The value of acceleration due to gravity is 10 m/s^2, the pressure exerted by water at the base of the dam will be

    A. 1.43×10^4 Pa
    B. 1.43×10^5 Pa
    C. 1.43×10^6 Pa
    D. 1.43×10^7 Pa

20. According to Archimedes Principle, the "upthrust" of the displaced liquid is equal to its

    A. mass.
    B. depth.
    C. weight.
    D. volume.

21. The normal body temperature is 98.6 ^{o}F. This temperature is equal to

    A. 37 ^{o}C
    B. 43 ^{o}C
    C. 57 ^{o}C
    D. 69 ^{o}C

22. The amount of heat energy required to change a substance from solid into liquid state at its melting point without any change in its temperature is known as

    A. heat capacity.
    B. latent heat of fusion.
    C. specific heat capacity.
    D. latent heat of vapourisation.

23. When a glass test tube is heated at a high temperature and then immediately immersed in a beaker of cold water, it cracks because the glass has

    A. low thermal conductivity.
    B. low specific heat capacity.
    C. high thermal conductivity.
    D. high specific heat capacity.

24. All of the following are factors on which rate of energy transfer through radiation from one body to another body depends on EXCEPT

    A. surface area.
    B. surface temperature.
    C. colour of the surface.
    D. pressure on the surface.

25. Metals are good conductor of heat because

    A. they have free electrons.
    B. their electrons emit energy.
    C. their molecules move very fast.
    D. they have big size of their molecules.

END OF PAPER

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS IX EXAMINATION

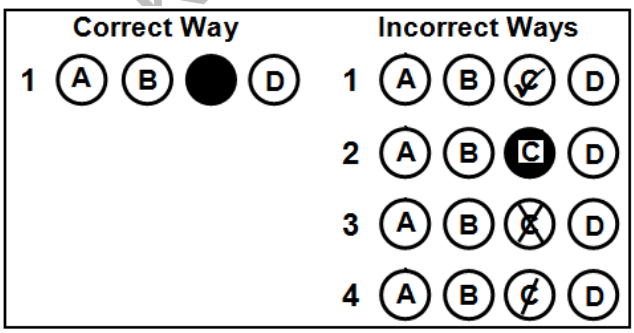
APRIL/ MAY 2017

Physics Paper I

Time: 35 minutes Marks: 25

INSTRUCTIONS

1. Read each question carefully.
2. Answer the questions on the separate answer sheet provided. DO NOT write your answers on the question paper.
3. There are 100 answer numbers on the answer sheet. Use answer numbers 1 to 25 only.
4. In each question there are four choices A, B, C, D. Choose ONE. On the answer grid black out the circle for your choice with a pencil as shown below.



Candidate's Signature

5. If you want to change your answer, ERASE the first answer completely with a rubber, before blacking out a new circle.
6. DO NOT write anything in the answer grid. The computer only records what is in the circles.
7. You may use a simple calculator if you wish.

1. The total number of basic physical quantities are

   A. 3
   B. 5
   C. 7
   D. 9

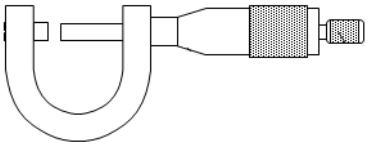
2. The density of pure water is 1000 kg/m^3. This value in scientific notation can be written as

   A. 1.0×10^{-3} kg/m^3
   B. 10.0×10^{-3} kg/m^3
   C. 1.0×10^{3} kg/m^3
   D. 10.0×10^{3} kg/m^3

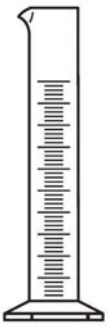
3. Which of the following measuring instruments is used to find the diameter of a metallic wire?

A

B



C



D

4. If a body is falling freely, its motion will be

   A. linear.
   B. random.
   C. periodic.
   D. vibratory.

5. Which of the following statements is CORRECT about force and velocity?

   A. Both are scalar quantities.
   B. Both are vector quantities.
   C. Force is a vector quantity and velocity is a scalar quantity.
   D. Force is a scalar quantity and velocity is a vector quantity.

6. The gradient of a line on the distance-time graph represents

   A. time.
   B. speed.
   C. acceleration.
   D. displacement.

7. If a body is taken to the surface of the moon, then which of the following physical quantities of the body will change?

   A. Mass
   B. Length
   C. Weight
   D. Density

8. If the force acting on a body is doubled, then the acceleration produced in it will be

   A. halved.
   B. tripled.
   C. doubled.
   D. quadrupled.

9. Two equal but opposite parallel forces acting at different points on a body would form a

   A. torque.
   B. couple.
   C. moment arm.
   D. line of action.

10. The product of force and moment arm of the force is called

    A. torque.
    B. couple.
    C. equilibrium.
    D. centre of gravity.

11. A point where the whole weight of a body acts vertically downward is called the

    A. centre of Earth.
    B. point of contact.
    C. centre of gravity.
    D. point of applied force.

12. The value of acceleration due to gravity ‘g’ decreases with the

    A. decrease in mass.
    B. increase in weight.
    C. decrease in density.
    D. increase in altitude.

13. The moon revolves around the Earth due to the gravitational force exerted on the moon by the

    A. Sun.
    B. Earth.
    C. space.
    D. satellite.

14. If an astronaut attain a height equal to the radius of the Earth, then his weight related to the Earth surface will become

    A. half.
    B. twice.
    C. one-third.
    D. one-fourth.

15. If the kinetic energy of a 200 kg object is 10,000 J, then the velocity of the object will be

    A. 0.01 m/s.
    B. 0.02 m/s.
    C. 10 m/s.
    D. 100 m/s.

16. The vertical height of a staircase is 5 m. If a student of mass 51 kg runs up the stairs in 10 s, then the power exerted by the student will be

    (**Note:** Take acceleration due to gravity 'g' = 10 m/s^2.)

    A. 2.55 W
    B. 25.5 W
    C. 255 W
    D. 2550 W

17. If 25 N force is applied to drag a table in the horizontal direction through a distance of 5 m, then the magnitude of work done on the table will be

    A. 0.2 J
    B. 5 J
    C. 20 J
    D. 125 J

18. If a person exerts force which causes a car to move forward, then this is an example of

    A. power.
    B. efficiency.
    C. work done.
    D. rotatory motion.

19. According to the kinetic molecular model of matter, molecules of a substance

    A. are in the state of rest.
    B. are in the state of motion.
    C. have constant momentum.
    D. have same velocity during collision.

20. The property of matter by which it restores its length, shape or volume after the removal of the deforming force is called

A. stress.
B. strain.
C. elasticity.
D. elastic limit.

21. The quantity that determines the average kinetic energy of the molecules of a substance is known as

A. heat.
B. temperature.
C. latent heat of fusion.
D. latent heat of vaporisation.

22. The escape of high kinetic energy molecules in the form of vapours from the surface of a liquid without heating is known as

A. fusion.
B. boiling.
C. evaporation.
D. condensation.

23. The table given below shows four different substances of equal masses with their values of specific heat capacity. If the same amount of heat is given to all, then which substance will show the maximum rise in temperature?

	Substance of Equal Mass	**Specific Heat Capacity (J/kg.K)**
A	Brick	900
B	Carbon	121
C	Alcohol	2500
D	Aluminium	903

24. All of the following are factors on which rate of evaporation depends EXCEPT on the

A. surface area.
B. surface temperature.
C. colour of the surface.
D. pressure at the surface.

25. All of the following show transfer of heat by convection EXCEPT the use of

A. fans to dry off sweat.
B. hot air to fly off gliders.
C. gas heaters to heat up rooms.
D. heating pads to relax muscles.

END OF PAPER

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS IX EXAMINATION

APRIL/ MAY 2018

Physics Paper I

Time: 35 minutes Marks: 25

INSTRUCTIONS

1. Read each question carefully.
2. Answer the questions on the separate answer sheet provided. DO NOT write your answers on the question paper.
3. There are 100 answer numbers on the answer sheet. Use answer numbers 1 to 25 only.
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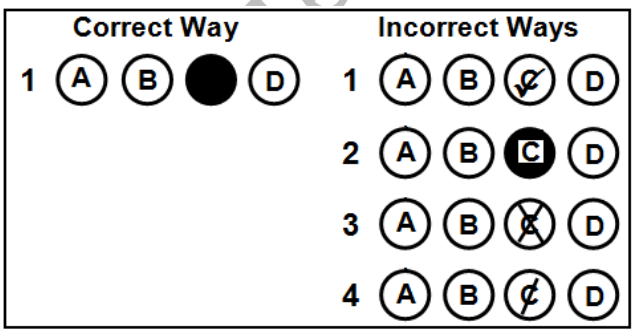


Candidate's Signature

5. If you want to change your answer, ERASE the first answer completely with a rubber, before blacking out a new circle.
6. DO NOT write anything in the answer grid. The computer only records what is in the circles.
7. You may use a simple calculator if you wish.

1. Which of the following is a derived physical quantity?

   A. Time
   B. Mass
   C. Length
   D. Volume

2. The prefix used for the multiple value of 10^{-9} is

   A. atto.
   B. pico.
   C. nano.
   D. femto.

3. In 0.020180, the total numbers of significant figures are

   A. four.
   B. five.
   C. six.
   D. seven.

4. The type of motion that takes place in a simple pendulum is

   A. linear.
   B. circular.
   C. random.
   D. vibratory.

5. Which of the following is a vector quantity?

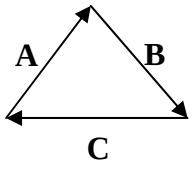
   A. Time
   B. Mass
   C. Distance
   D. Velocity

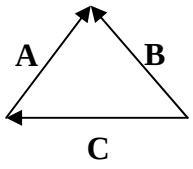
6. A ball is dropped from the top of a building. If it takes four seconds to reach the ground, then the height of the building is

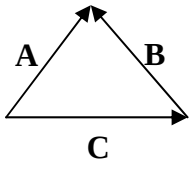
   (**Note**: Use the value of acceleration due to gravity 'g' as 10 m/s^2.)

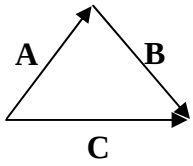
   A. 20 m
   B. 40 m
   C. 80 m
   D. 160 m

7. Using head to tail rule of vector addition, which vector diagram, represents the resultant of vectors **A** and **B** as vector **C**?

A. 

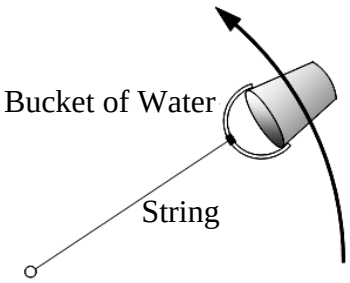
B. 

C. 

D. 

8. When a bucket full of water is rapidly whirled in a vertical circular path as shown in the given diagram, then water in the bucket

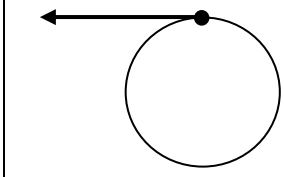
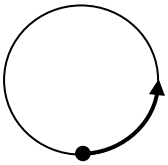
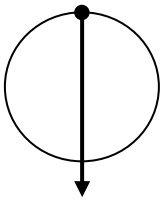
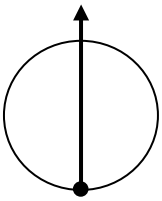
A. falls out at once.
B. remains fully in it.
C. leaks out gradually.
D. reduces to half in quantity.



9. The turning effect of a force about an axis of rotation is called

A. torque.
B. couple.
C. momentum.
D. equilibrium.

10. If the contact of a rotating stone attached with a string breaks, then in which direction will the detached stone move?

Direction of the Detached Stone			
A		B	
C		D	

11. If the position of a body is disturbed and it does not return to its original position, then the body will be in

I. stable equilibrium.
II. neutral equilibrium.
III. unstable equilibrium.

A. I only
B. III only
C. I and II
D. II and III

12. While digging, a miner moves 25 km deep down in a coal mine.

Compared to his actual weight on the surface of the Earth, his weight inside the coal mine will

A. increase.
B. decrease.
C. remain the same.
D. vary in an unpredictable manner.

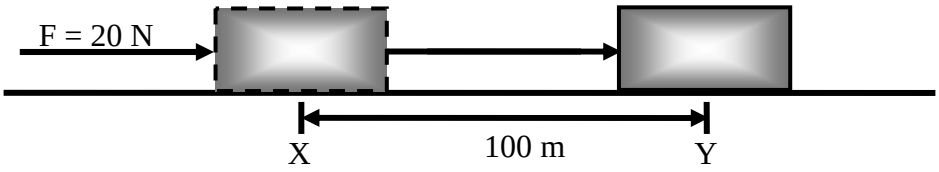
13. The value of acceleration due to gravity ‘g’ varies with the

A. distance of the Earth from the Sun.
B. change in temperature of the Earth.
C. distance from the centre of the Earth.
D. change in atmospheric pressure on Earth’s surface.

14. All the planets revolve around the Sun due to the presence of

A. cohesive force between the planets.
B. centripetal force between the planets.
C. mutual attraction between the planets.
D. gravitational attraction between planets and the Sun.

15. Force (F) is applied to move the block across a smooth surface from point (X) to point (Y) as shown in the given diagram.

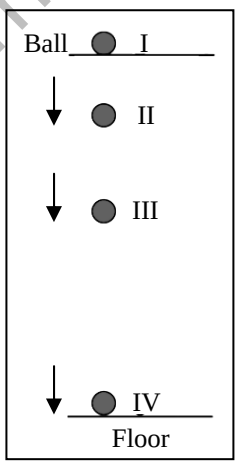


The amount of work done by the applied force (F) is

A. 2 J
B. 20 J
C. 200 J
D. 2000 J

16. A metallic ball is dropped from a certain height as shown in the given figure. Neglecting the air resistance, the total energy of the ball will be

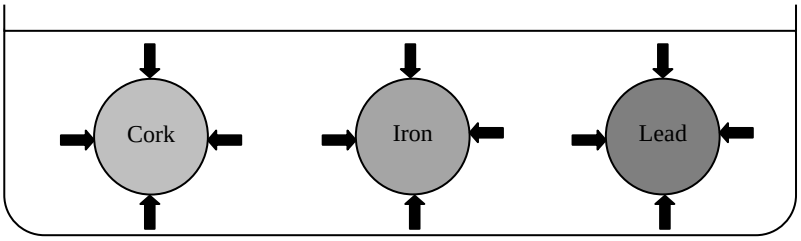
A. maximum at II and III only.
B. maximum at I and II only.
C. same at I and III only.
D. same at all positions.



17. The cycle in which conversion of energy takes place at fossil fuel power stations is

A. Heat → light → kinetic
B. Heat → light → electrical
C. Heat → kinetic → electrical
D. Heat → electrical → chemical

18. Three different balls of the same diameter are immersed in water completely. Which of the following is TRUE about the upthrust exerted by water on the balls?



A. All balls have the same upthrust.
B. Iron ball has maximum upthrust.
C. Cork ball has maximum upthrust.
D. Lead ball has maximum upthrust.

19. According to the kinetic theory of matter, particles move randomly with high velocities in

A. solids.
B. gases.
C. liquids.
D. plasma.

20. Force acting on unit area of an object causing changes in its shape and size is called

A. strain.
B. stress.
C. viscosity.
D. elasticity.

21. Mercury is commonly used in a glass thermometer because it

A. is easily available.
B. is silver in appearance.
C. has a high freezing point.
D. expands evenly with respect to temperature.

22. If the temperature of a substance is $20^{o}C$, then its temperature in Kelvin scale will be

A. –253 K
B. –6.66 K
C. 68 K
D. 293 K

23. When a small piece of red-hot iron is dropped into a vessel of boiling water, the temperature of water will

A. increase.
B. decrease.
C. remain constant.
D. become same as iron.

24. An example of a good conductor of heat is a

    A. glass door.
    B. frying pan.
    C. wooden door.
    D. leather jacket.

25. The ventilator in a room works on the principle of

    A. radiation.
    B. convection.
    C. conduction.
    D. evaporation.

END OF PAPER

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS IX EXAMINATION

APRIL/ MAY 2019

Physics Paper I

Time: 45 minutes Marks: 30

INSTRUCTIONS

1. Read each question carefully.
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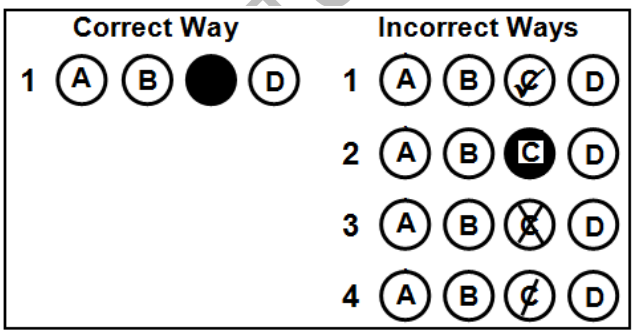


Candidate's Signature

5. If you want to change your answer, ERASE the first answer completely with a rubber, before blacking out a new circle.
6. DO NOT write anything in the answer grid. The computer only records what is in the circles.
7. You may use a simple calculator if you wish.

1. The scientific notation of 0.00002019 is

   A. 2.019×10^{-5}
   B. 2.019×10^{-4}
   C. 2.019×10^{4}
   D. 2.019×10^{5}

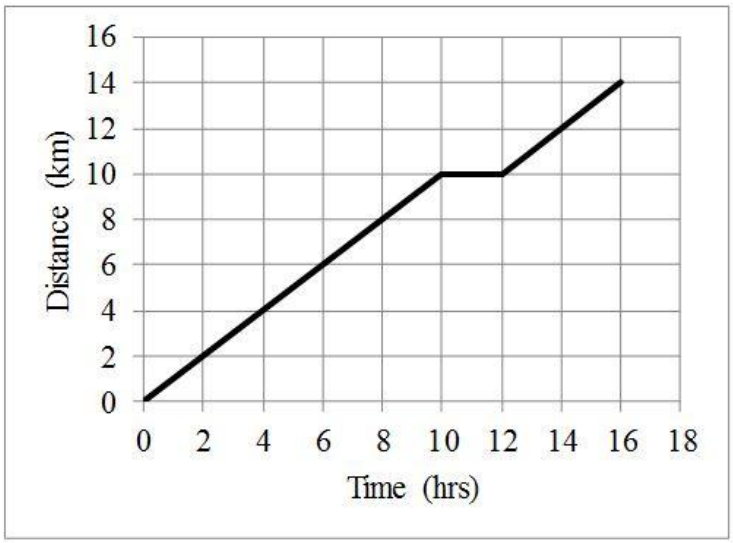
2. Which of the following instruments is used to measure the internal diametre of a pipe?

   A. Metre rule
   B. Screw gauge
   C. Vernier callipers
   D. Measuring cylinder

3. An athlete runs around a circular track of radius 50 m and finishes at the same point where he began his journey. His total displacement in metre(s) is evaluated to be

   A. 0
   B. $\frac{\pi}{2}$
   C. 2π
   D. 100π

4. A distance-time graph of a moving object is given below.



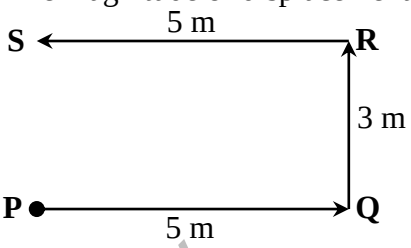
   With reference to the given graph, the distance covered during 10 to 12 hours is

   A. 0 km.
   B. 2 km.
   C. 5 km.
   D. 10 km.

5. A car starts from rest and has uniform acceleration of 10 m/s^2. After some time it possess the velocity of 30 m/s. The distance covered by the car during this time is

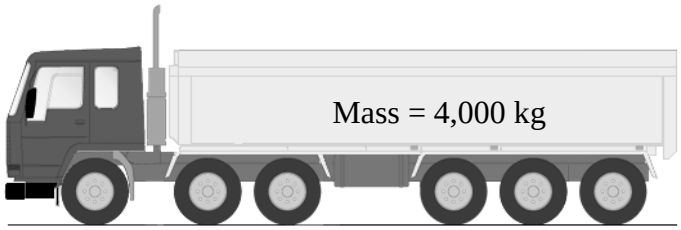
   A. 920 m.
   B. 880 m.
   C. 50 m.
   D. 45 m.

6. A boy starts his travelling from a point **P** and ends at point **S**. The magnitude of displacement from point **P** to **S** is



   A. 3 m.
   B. 5 m.
   C. 8 m.
   D. 13 m.

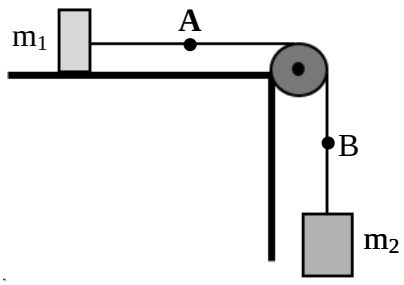
7. The momentum of a moving truck as shown in the given diagram is



   A. 3,978 kg.m/s.
   B. 4,022 kg.m/s.
   C. 88,000 kg.m/s.
   D. 968,000 kg.m/s.

8. In the given figure, two blocks of masses m_1 and m_2 are attached with an inextensible string such that the pulley and the horizontal surface are frictionless.

   If the blocks are at rest, then the tension in the string at point **A** will be



   A. zero.
   B. equal to tension at point B.
   C. less than tension at point B.
   D. greater than tension at point B.

9. An object is moving on a horizontal surface. The force exerted by the horizontal surface that opposes the motion of the object is

   A. weight.
   B. gravity.
   C. tension.
   D. friction.

10. In an elastic collision, which of the following also remains conserved along with momentum?

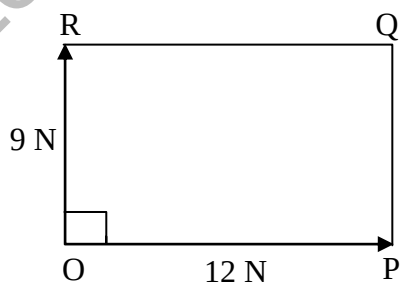
   A. Potential energy
   B. Kinetic energy
   C. Sound energy
   D. Heat energy

11. If the maximum moment of force on a door is 10 Nm by an applied force of 2.25 N, then the distance of handle from hinge (pivot) is

   A. 0.225 m.
   B. 4.444 m.
   C. 12.250 m.
   D. 22.500 m.

12. Two forces act at the right angle at point O, as shown in the given figure. What will be the magnitude and direction of the resultant force?

	Magnitude	**Direction**
A	15 N	along $\overrightarrow{OQ}$
B	15 N	along $\overrightarrow{PR}$
C	21 N	along $\overrightarrow{OQ}$
D	21 N	along $\overrightarrow{PR}$



13. Let suppose, a hole is drilled through the Earth along the diametre and a stone is dropped into it. When the stone reaches the centre of the Earth keeping same size and shape, it has constant

   A. mass.
   B. weight.
   C. momentum.
   D. acceleration.

14. A satellite is revolving around the Earth in a circular orbit with a velocity v.

   If the gravitational force between the satellite and the Earth suddenly disappears, then the velocity of the satellite will be

   A. 0
   B. v
   C. 2v
   D. infinite.

15. If the radius of the Earth shrinks by 1%, while its mass remains the same, then the acceleration due to gravity on the Earth's surface would

    A. increase.
    B. decrease.
    C. remain the same.
    D. vary in an unpredictable manner.

16. If a planet comes closer to the Sun, then the planet will

    A. orbit faster.
    B. orbit slower.
    C. fall into the Sun.
    D. keep moving with the same speed as earlier.

17. An astronaut returns from the Moon to the Earth. Which of the following is the CORRECT description about his/ her mass and weight?

	Mass	**Weight**
A	Less on Earth than Moon	Same on Earth and Moon
B	More on Earth than Moon	Same on Earth and Moon
C	Same on Earth and Moon	Less on Earth than Moon
D	Same on Earth and Moon	More on Earth than Moon

18. A car travels a distance of 150 m in the direction of a constant force of 50 N. The work done on the car is

    A. 3 J.
    B. 100 J.
    C. 200 J.
    D. 7500 J.

19. A car has stopped after screeching to avoid a crash with a van.

    With reference to the given situation, the kinetic energy of the car will then be converted into

    A. sound energy only.
    B. heat and sound energy.
    C. heat and potential energy.
    D. potential and sound energy.

20. If a loading truck has an output of 3600 J and its efficiency is 50%, then the input provided to the truck will be

    A. 18 J.
    B. 72 J.
    C. 7200 J.
    D. 10800 J.

21. As compared to the sea level, atmospheric pressure on mountains

    A. is lower.
    B. is higher.
    C. is the same.
    D. varies unpredictably.

22. While drinking juice with the help of a straw from a juice cane, the air pressure inside the straw will

    A. increase.
    B. decrease.
    C. remain constant.
    D. vary unpredictably.

23. A change caused by stress in original shape, volume or length is called as

    A. strain.
    B. density.
    C. pressure.
    D. elasticity.

24. If the temperature of a gas is increased continuously, then which of the following energies increases in the gas molecules?

    A. Heat energy
    B. Light energy
    C. Kinetic energy
    D. Potential energy

25. If the temperature of a hot pot is 125^{o}C, then its temperature in kelvin will be

    A. 148 K.
    B. 225 K.
    C. 257 K.
    D. 398 K.

26. When Sun rays fall on a stone and water in a beaker, the stone becomes hot quickly as compared to water. This is because the stone has

    A. more heat capacity than water.
    B. more thermal expansion than water.
    C. less latent heat of fusion than water.
    D. less specific heat capacity than water.

27. In evaporation, water starts converting into vapours

    A. at exactly 4°C.
    B. at any temperature.
    C. more than 100°C only.
    D. between 0°C and 4°C only.

28. If the thickness of a wall is doubled, then the thermal conductivity will

A. become one half.
B. become double.
C. become one fourth.
D. remain same.

29. Heat reaches the surface of the Earth from the Sun MAINLY because of

I. radiation.
II. convection.
III. conduction.

A. I only
B. III only
C. I and II
D. II and III

30. All of the following factors affect the rate of transfer of energy in radiation EXCEPT

A. surface area.
B. surface temperature.
C. shape of the surface.
D. colour and texture of the surface.

END OF PAPER

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS IX

ANNUAL EXAMINATIONS 2021

Physics

Total Time: 1 hour 40 minutes

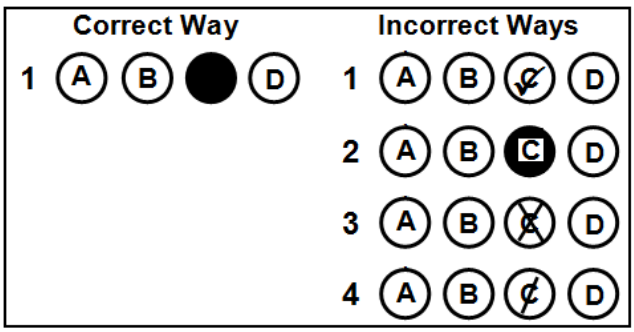
Total Marks: 50 (40-Theory & 10-Alternate to Practical)

INSTRUCTIONS

1. Read each question carefully.
2. Answer the questions on the separate answer sheet provided. DO NOT write your answers on the question paper.
3. There are 100 answer numbers on the answer sheet. Use answer numbers 1 to 50 only.
4. Question Distribution:

Theory	Alternate to Practical (ATP)
40 MCQs	10 MCQs

5. In each question, there are four choices A, B, C, D. Choose ONE. On the answer grid, black out the circle for your choice with a pencil as shown below.



Candidate's Signature

6. If you want to change your answer, ERASE the first answer completely with a rubber, before blacking out a new circle.
7. DO NOT write anything in the answer grid. The computer only records what is in the circles.
8. The marks obtained on the 40 MCQs will be equated to the total marks of 65 for the theory examination results.
9. You may use a simple calculator if you wish.

THEORY (Questions 1-40)

1. If 1.76 cm^3 is the volume of one cube, then the volume of twenty-one such cubes rounded off to three significant figures is

   A. 36.0 cm^3.
   B. 36.9 cm^3.
   C. 36.96 cm^3.
   D. 37.0 cm^3.

2. The number 123.4 can also be written in scientific notation as

   A. 0.1234×10^3
   B. 1.234×10^{-2}
   C. 1.234×10^2
   D. 12.34×10^1

3. The prefix used for the multiple value of 10^{-9} is

   A. atto.
   B. pico.
   C. nano.
   D. femto.

4. All of the following are the scalar quantities EXCEPT

   A. time.
   B. mass.
   C. distance.
   D. velocity.

5. A child drops a tennis ball from the height of 10 m. The velocity of the ball just before it strikes the ground will be

   (**Note**: The value of acceleration due to gravity is 9.8 m/s^2.)

   A. 14.0 m/s.
   B. 19.8 m/s.
   C. 21.8 m/s.
   D. 98.0 m/s.

6. If a stone placed at a certain height takes 5 seconds to reach the ground when it is dropped, then the distance covered by this stone will be

   (**Note**: The value of acceleration due to gravity is 9.8 m/s^2.)

   A. 24.5 m.
   B. 49.0 m.
   C. 122.5 m.
   D. 490.0 m.

7. The moving blades of an electric fan exemplifies

   A. circular motion.
   B. rotatory motion.
   C. vibratory motion.
   D. translatory motion.

8. The given table shows the distance covered by a car in four different segments.

Segment	Distance Covered (m)
I	0-10
II	11-22
III	23-35
IV	36-49

   If the car takes same interval of time to cover all four segments, then the car

   A. is accelerating.
   B. is decelerating.
   C. has uniform velocity.
   D. comes to rest after each segment.

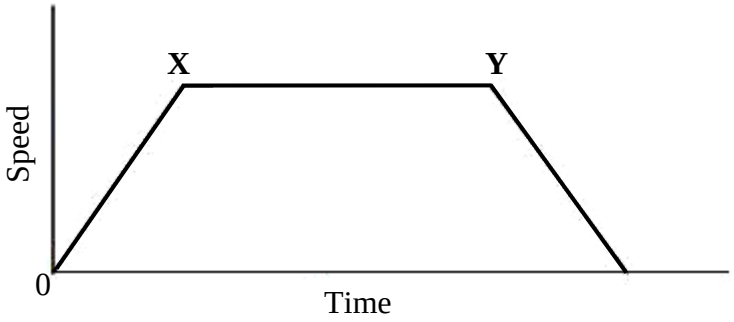
9. A force of 10 N is acting on a body along *x*-axis. The value of its *y*-component will be

   A. 0 N.
   B. 5 N.
   C. 10 N.
   D. 20 N.

10. If two forces of 3 N and 4 N are acting at a point, perpendicular to each other, then their resultant force will be

   A. 5 N.
   B. 7 N.
   C. 25 N.
   D. $\sqrt{7}$ N.

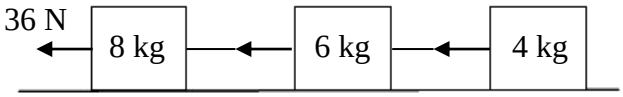
11. Consider the given speed-time graph.



The speed of an object from point **X** to **Y** is

A. decreasing.
B. increasing.
C. uniform.
D. zero.

12. A 36 N force pulls a system of three masses on a horizontal frictionless surface as shown in the given figure. The acceleration of this system of masses is



A. 0.5 m/s^2.
B. 2 m/s^2.
C. 5 m/s^2.
D. 18 m/s^2.

13. A mass *m* with velocity *v* strikes a wall perpendicularly and returns with the same velocity.

What is the change in momentum of the body when it returns?

A. $-mv$
B. $2mv$
C. $-2mv$
D. zero

14. An astronaut is sitting in a rocket on the Earth which is ready to launch to the Moon.

When the astronaut will reach to the Moon, his weight and mass would

	Weight	**Mass**
A	increase	remain the same
B	remain the same	increase
C	decrease	remain the same
D	remain the same	decrease

15. If the two ends of a string are stretched by two opposite forces of 10 N each, then the tension in the string is

    A. 0 N.
    B. 5 N.
    C. 10 N.
    D. 20 N.

16. How much centripetal force is needed to move a body of mass 10 kg in a circle of radius 20 m with a speed 3 m/s?

    A. 1.5 N
    B. 4.5 N
    C. 13 N
    D. 33 N

17. The measure of inertia of a body is its

    A. mass.
    B. force.
    C. weight.
    D. velocity.

18. If a body of mass 10 kg is placed on the surface of the Earth, then the pull of the Earth on the body will be

    (**Note**: The value of acceleration due to gravity is 9.8 m/s^2.)

    A. 0.98 N.
    B. 19.8 N.
    C. 98 N.
    D. 100 N.

19. It is difficult to drive a car on an oily road because the frictional force

    A. increases.
    B. decreases.
    C. becomes zero.
    D. remains unchanged.

20. A sports racing car is made stable by

    A. raising its height.
    B. increasing its speed.
    C. decreasing its width.
    D. lowering its centre of gravity.

21. The perpendicular distance between axis of rotation and line of action of force is called

    A. momentum.
    B. acceleration.
    C. moment arm.
    D. displacement.

22. If, after disturbance, a body again comes to rest and its centre of gravity does not change, then this phenomenon is/ are called

    I. stable equilibrium
    II. unstable equilibrium
    III. neutral equilibrium

    A. I only.
    B. III only.
    C. I and III.
    D. II and III.

23. Compared to the sea level, the atmospheric pressure on mountains is

    A. equal.
    B. higher.
    C. lower.
    D. zero.

24. To push the liquid up in a straw, the air pressure inside the straw will

    A. increase.
    B. decrease.
    C. become zero.
    D. remain constant.

25. According to the kinetic molecular model of matter, the molecules of a substance

    A. are in the state of rest.
    B. are in the state of motion.
    C. have constant momentum.
    D. have same velocity during collision.

26. The property of solids that restore them to their original shapes when the external force acting on them stops is called

    A. buoyancy.
    B. elasticity.
    C. strain.
    D. stress.

27. A parcel box of weight 500 N is placed on a table. If the area of the bottom of the box is measured as 0.50 m^2, then the pressure exerted by the box on the table will be

    A. 250 Pa.
    B. 499.5 Pa.
    C. 500.5 Pa.
    D. 1000 Pa.

28. In a magic show, a performer lies down on a bed of nails without any injury. However, when the same performer steps on a single nail, it goes right through his foot.

    With reference to the given situation, which of the following statements is TRUE?

    A. Area is same in both cases, but more force is applied on the bed of nails.
    B. Force remains the same but more pressure on the bed of nails.
    C. Force increases but less pressure on the bed of nails.
    D. More force is exerted on a single nail than on the entire bed of nails.

29. In a clinical thermometer, mercury does not fall back to the bulb because

    A. it is less in quantity.
    B. it is in a capillary tube.
    C. of the shape of the thermometer's bulb.
    D. of the constriction in the capillary tube.

30. All of the following are factors on which the rate of evaporation depends EXCEPT for the

    A. surface area.
    B. surface temperature.
    C. colour of the surface.
    D. pressure at the surface.

31. The escape of high kinetic energy molecules in the form of vapours from the surface of a liquid without heating is known as

    A. fusion.
    B. boiling.
    C. evaporation.
    D. condensation.

32. If an inflated tyre of a car bursts, then the temperature of air that will escape from the tyre

    A. increases.
    B. decreases.
    C. becomes 100°C.
    D. remains constant.

33. If the temperature of a substance is 20°C, then its temperature in Kelvin scale will be

A. – 253 K.
B. – 6.66 K.
C. 68 K.
D. 293 K.

34. When a glass test tube which is heated at a high temperature is immediately immersed in a beaker of cold water, it cracks because as compared to the cold water, the glass has

A. low thermal conductivity.
B. low specific heat capacity.
C. high thermal conductivity.
D. high specific heat capacity.

35. An example of a good conductor of heat is a

A. glass door.
B. frying pan.
C. wooden door.
D. leather jacket.

36. Radiations incident on a surface increases its temperature.

Which of the following characteristics should be present in a surface that can protect itself MOST effectively against radiation?

A. Poor absorber and poor emitter
B. Poor absorber and good emitter
C. Good absorber and poor emitter
D. Good absorber and good emitter

37. Which of the following statements is FALSE about heat transfer?

A. Conduction is poor in gases.
B. The hotter the substance, the less will be the radiation.
C. A cold substance attains the temperature of its surroundings.
D. As a substance absorbs heat, its temperature always increases.

38. All of the following are the methods to prevent heat loss from houses in winter EXCEPT

A. tiled floor.
B. carpeted floor.
C. double ceiling.
D. double glazed windows.

39. The process of transfer of heat in liquids and gases is/ are

I. conduction
II. convection
III. radiation

A. I only.
B. II only.
C. I and III.
D. II and III.

40. When a wooden spoon is dipped in a bowl of soup, it does not become hot.

In the given situation, the wooden spoon acts as a/ an

A. electrical conductor.
B. electrical insulator.
C. heat conductor.
D. heat insulator.

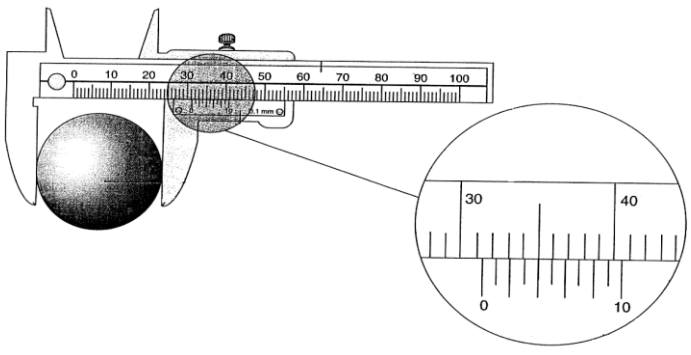
ALTERNATE TO PRACTICAL (ATP: Questions 41-50)

41. You are given a glass test tube to determine its volume.

The instrument that will be the BEST choice to determine the volume is

A. meter rule.
B. screw gauge.
C. measuring tape.
D. Vernier callipers.

42. The given figure focuses on the magnified part of Vernier callipers.



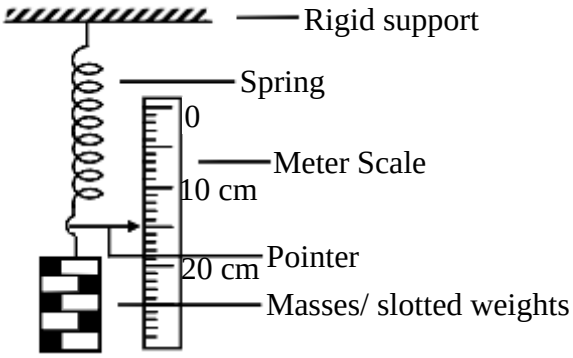
The main scale reading on the Vernier callipers is

A. 30.1 mm.
B. 31.0 mm.
C. 35.0 mm.
D. 40.1 mm.

43. In an amusement park, a child takes a slide. He starts from rest and his velocity becomes 5 m/s in 5 s just before his feet touch the ground. The acceleration of the child is

A. 1 m/s^2.
B. 5 m/s^2.
C. 10 m/s^2.
D. 25 m/s^2.

44. In the given mass-spring system, five slotted weights each of 50 g are hanged on the helical spring.

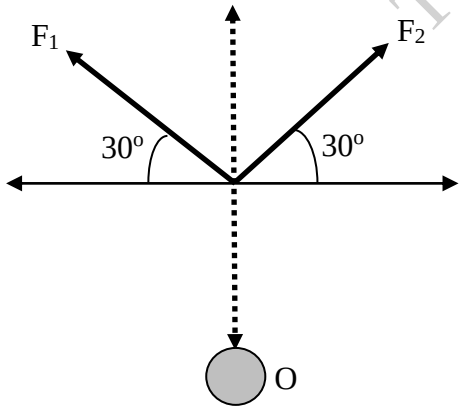


If one slotted weight is removed from the spring, then the reading on the metre scale will be

(**Note**: There is no systematic error in the instrument.)

A. 3 cm.
B. 6 cm.
C. 12 cm.
D. 15 cm.

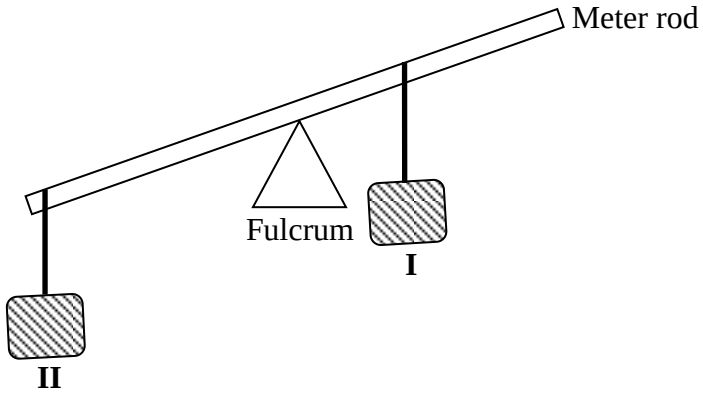
45. The given figure shows the vector addition of forces.



If $F_1 = F_2 = 50$ N are acting on an unknown object 'O', then the weight of the object will be

A. 0 N.
B. 50 N.
C. 100 N.
D. 150 N.

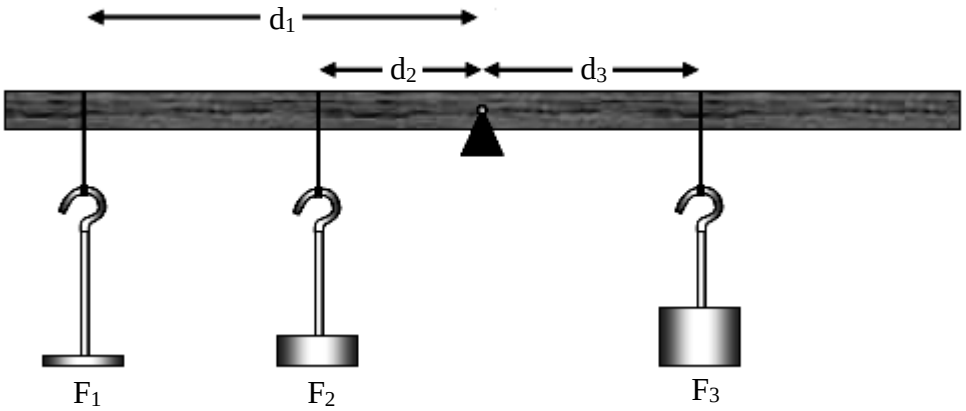
46. The given figure shows two equal boxes, **I** and **II**, hanged on a meter rod fixed at the fulcrum.



A student has been given the task by his/ her teacher to balance the meter rod. He/ she should

A. place box I in the centre.
B. place boxes I and II over each other.
C. move box I towards the fulcrum.
D. move box I away from the fulcrum.

47. In the given figure, a uniform meter rod is balanced at its centre by a fulcrum.



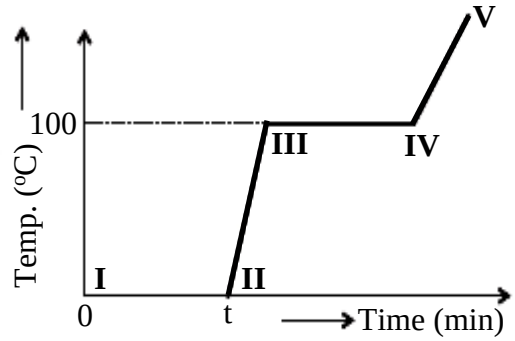
The distances d_1, d_2 and d_3 are equal to 40 cm, 10 cm and 15 cm respectively. If F_1 and F_2 are equal to 5 N and 10 N respectively, then the magnitude of F_3 will be

A. 5 N.
B. 20 N.
C. 50 N.
D. 80 N.

48. In a science lab, a student heats up a chemical substance from 10°C to 20°C which requires thermal energy of 1000 J. If mass of the substance is 10 kg, then the specific heat capacity of the substance will be

A. 3 J/kg°C.
B. 5 J/kg°C.
C. 10 J/kg°C.
D. 15 J/kg°C.

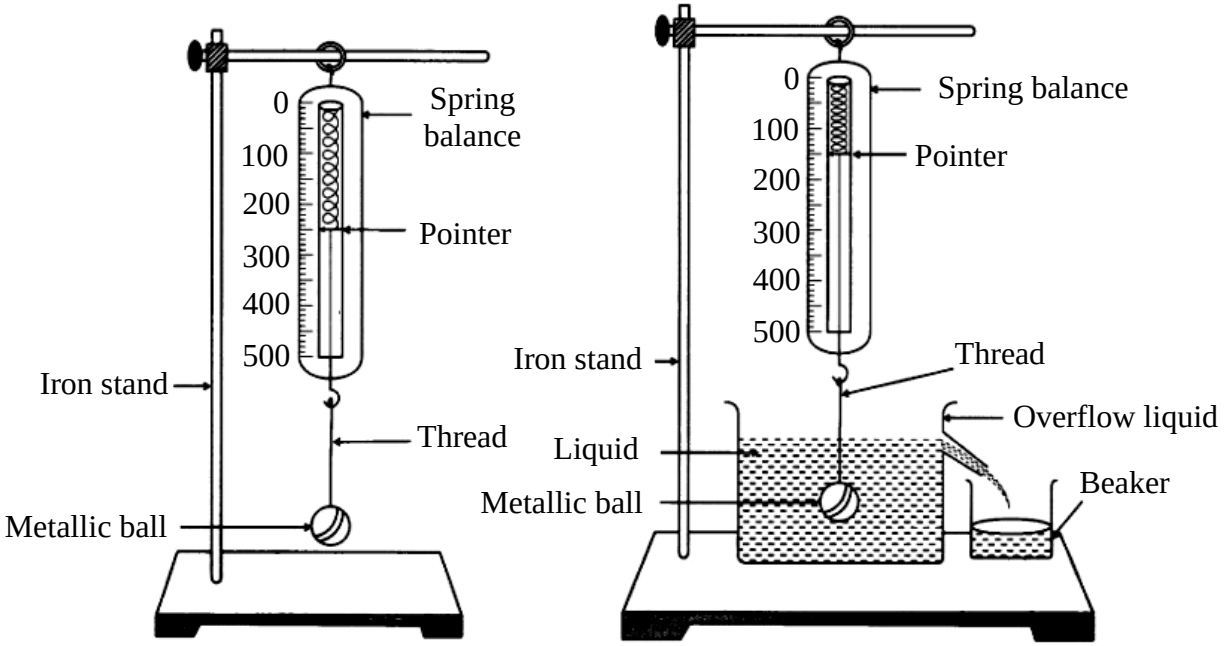
49. The given graph shows the changes of ice into water on heating.



Which of the following statements is TRUE about the given graph?

A. At point II, water starts boiling.
B. The region II to III represents condensation.
C. At point III, all the water gets converted into steam.
D. The region I to II represents ice and water in thermal equilibrium.

50. The pointer of a spring balance in **figure II** moves up, when a metallic ball, suspended from it, is immersed into a liquid that is denser as compared to air. Refer **figure I** for comparison.



This difference in reading is observed because

A. density of the liquid changes.
B. upthrust on the ball becomes less.
C. of apparent loss in the weight of the ball.
D. weight of the ball acts vertically downwards.

END OF PAPER

THEORY (Questions 1-40)

1. The scientific notation of 0.00002019 is

   A. 2.019×10^{-5}
   B. 2.019×10^{-4}
   C. 2.019×10^{4}
   D. 2.019×10^{5}

2. The total number of significant figures in 2030 is

   A. 2
   B. 3
   C. 4
   D. 6

3. The instrument used to measure the length of a solid cylinder is called a

   A. screw gauge.
   B. physical balance.
   C. Vernier callipers.
   D. measuring cylinder.

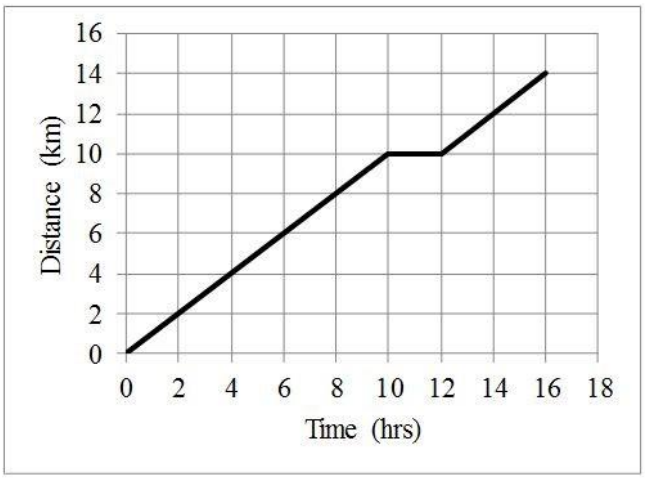
4. Which of the following physical quantities is obtained by the formula $\frac{\text{change in velocity}}{\text{time interval}}$?

   A. Speed
   B. Distance
   C. Acceleration
   D. Displacement

5. If a tractor starts from rest in a field, reaching its maximum velocity of 5 m/s in 10 s, then the acceleration of the tractor will be

   A. 0.5 m/s^2.
   B. 2 m/s^2.
   C. 5 m/s^2.
   D. 15 m/s^2.

6. A distance-time graph of a moving object is given below.



With reference to the given graph, the distance covered during 10 to 12 hrs is

A. 0 km.
B. 4 km.
C. 5 km.
D. 10 km.

7. A school bus starts moving from rest with an acceleration of 2 m/s^2. If it covers a distance of 25 m, then the final velocity of the bus will be

A. 0 m/s.
B. 10 m/s.
C. 50 m/s.
D. 100 m/s.

8. In a cricket match, a batsman hits a ball vertically upward with a velocity of 10 m/s.

The maximum height attained by the ball will be

(**Note**: The acceleration due to gravity is 9.8 m/s^2.)

A. 0.51 m.
B. 1.96 m.
C. 5.10 m.
D. 10.20 m.

9. The value of acceleration due to gravity 'g' is considered to be constant (9.8 m/s^2) for

A. the Mars orbiting the Sun.
B. a rocket launched in the air.
C. an object in free fall motion.
D. a car moving on a straight road.

10. A brick falls from the top of a building of 100 m high. The final velocity of the brick, when it hits the ground will be

(**Note**: The acceleration due to gravity is 9.8 m/s^2.)

A. 19.6 m/s.
B. 20.4 m/s.
C. 44.2 m/s.
D. 200.0 m/s.

11. An asteroid hit vertically on the surface of the Earth with a certain velocity.

The velocity and acceleration due to gravity of the asteroid just before hitting the ground will be

	Velocity	**Acceleration due to Gravity**
A	maximum	positive
B	minimum	positive
C	zero	negative
D	zero	positive

12. Which of the following physical quantities is due to the pull of the gravity?

A. Mass
B. Inertia
C. Weight
D. Tension

13. Two different metallic plates slid over each other in a machine.

The material that will reduce the MOST of the friction between them is

A. oil.
B. wax.
C. soap.
D. water.

14. A light inextensible rope is pulled by two boys in opposite directions with a force of 5 N each.

The total tension in the rope will be

A. 0 N.
B. 5 N.
C. 10 N.
D. 25 N.

15. A boy attached a stone of mass 0.1 kg at the end of a 1 m long rope. If the boy rotates the stone in a circle with a velocity of 2 m/s, then the tension in the rope will be

    A. 0.025 N.
    B. 0.4 N.
    C. 2 N.
    D. 4 N.

16. A student pedals a bicycle for 15 s. After some time, he/ she finishes cycling due to which the bicycle stops after 30 s.

    Which of the following physical quantities is responsible for bringing the bicycle at rest?

    A. Mass
    B. Inertia
    C. Weight
    D. Friction

17. If a school van takes a sharp turn, then the students sitting in the van would feel a push in outward direction due to

    A. inertia.
    B. torque.
    C. equilibrium.
    D. frictional force.

18. If 1 N force moves a 2 kg object in a circle of radius 8 m, then the velocity of the object will be

    A. 2 m/s.
    B. 4 m/s.
    C. 10 m/s.
    D. 16 m/s.

19. A teacher places a coin on a piece of card board that is placed on the open end of a glass. He/ she pulls the card board with a jerk. If the coin falls in the glass, then which of the following is demonstrated in the given experiment?

    A. Inertia
    B. Friction
    C. Balanced forces
    D. Law of momentum

20. A plumber is trying to open a screw with a spanner by applying a perpendicular force of 50 N at a distance of 0.1 m. The torque produced by the force will be

    A. 5 units.
    B. 49.9 units.
    C. 50.1 units.
    D. 500 units.

21. If the two opposite parallel forces of the same magnitude are applied on an object along different lines of action, then the object will experience

A. torque.
B. couple.
C. equilibrium.
D. frictional force.

22. In a children park, two children are sitting on a sea saw. If the sea saw is not moving, then the net torque will be

A. $\tau = 0$
B. $0 < \tau < 1$
C. $\tau = 1$
D. $1 < \tau < 2$

23. It is said that a cup of frozen ice cream has less volume as compared to the same amount of melted ice cream.

At room temperature, the mass and density of the melted ice cream will

	Mass of Ice Cream	**Density of Ice Cream**
A	change	be high
B	remain the same	be low
C	change	be low
D	remain the same	be high

24. As compared to the sea level, atmospheric pressure on mountains

A. is lower.
B. is higher.
C. is the same.
D. varies unpredictably.

25. The state of matter in which molecules are closely packed together and have vibratory motion is

A. gas.
B. solid.
C. liquid.
D. plasma.

26. A student is given a task to find the density of an irregular object.

The appropriate set of apparatus required will be

A	Vernier Callipers	Water	Measuring Cylinder
B	Screw Gauge	Physical Balance	Water
C	Physical Balance	Water	Measuring Cylinder
D	Spring Balance	Measuring Cylinder	Metre Rule

27. A change caused by stress in original shape, volume or length is called as

A. strain.
B. density.
C. pressure.
D. elasticity.

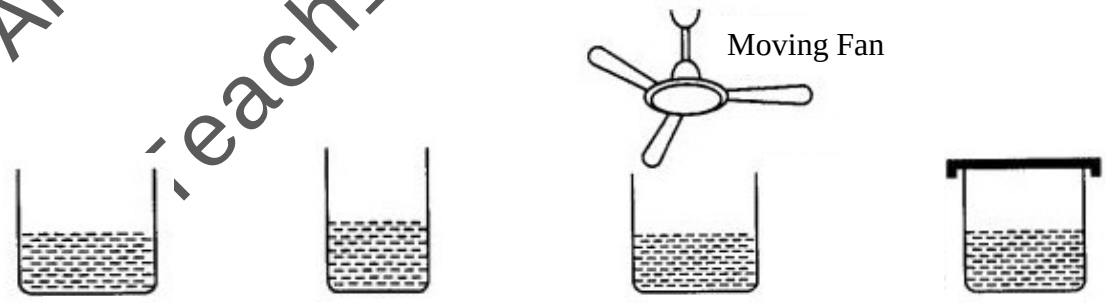
28. The example of Archimedes' principle is a

A. moving car.
B. floating ship.
C. moving rocket.
D. flying aeroplane.

29. Doctors use clinical thermometer to measure the temperature of a person. If a person has high fever, then the mercury in the bulb will

A. expand.
B. contract.
C. remain unchanged.
D. vary unpredictably.

30. In which of the following options the rate of evaporation will be the greatest?



A B C D

31. Which of the following statements is CORRECT, in order to increase the temperature of a substance?

A. It depends on the density of the object.
B. It depends on the internal energy of the object.
C. It is directly proportional to the amount of heat absorbed.
D. It is inversely proportional to the amount of heat evolved.

32. Considerable gaps are left in the construction of a railway track because of

A. linear thermal expansion.
B. linear thermal contraction.
C. volumetric thermal expansion.
D. volumetric thermal contraction.

33. It is commonly observed that the temperature of the land rises more quickly as compared to the temperature of the sea.

The option that describes the reason of the given phenomena is

	Specific Heat of Water	**Specific Heat of Land**
A	less	more
B	more	less
C	higher in summer	lower in winter
D	lower in winter	higher in summer

34. A 0.3 kg copper pipe needs to be heated from 50°C to 60°C. The energy required to heat the pipe will be

(**Note**: Take the specific heat capacity of copper as 444 J/kg°C.)

A. 1332 J.
B. 6660 J.
C. 7992 J.
D. 14652 J.

35. If the temperature of an object is higher as compared to its surroundings, then it will

A. radiate less heat.
B. conduct less heat.
C. absorb more heat.
D. radiate more heat.

36. In large working organisations, central heating systems is installed to save energy in the winter season.

In a closed room, the heating system MAINLY works on the phenomenon of

A. radiation.
B. convection.
C. evaporation.
D. condensation.

37. In a household kitchen, handles of spoons and utensils are made up of wood or rubber.

This is because wood and rubber are

A. bad conductors.
B. semiconductors.
C. good conductors.
D. super conductors.

38. Which of the following surfaces is the BEST radiator of heat energy?

A. A dull black surface
B. A shiny silver surface
C. A dark coloured surface
D. A light coloured surface

39. Heat reaches the surface of the Earth from the Sun MAINLY because of

I. radiation
II. convection
III. conduction

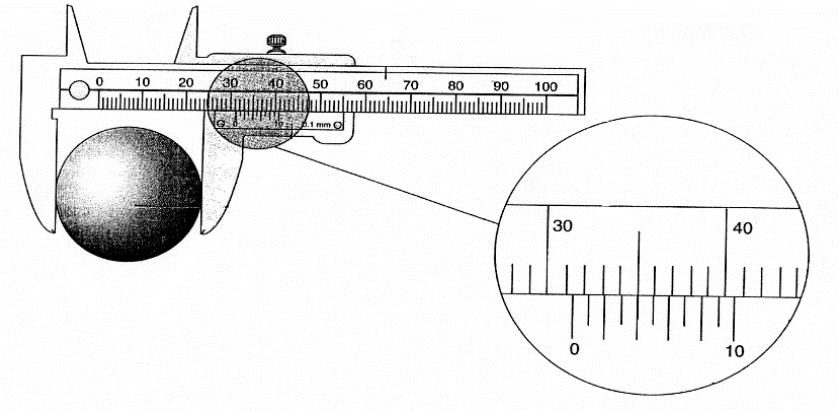
A. I only.
B. III only.
C. I and II.
D. II and III.

40. In the greenhouse effect, the greenhouse gases in the lower atmosphere

A. disintegrate into other gases.
B. help radiations to escape to space.
C. ionise other gases in the surrounding.
D. prevent radiations from escaping in the space.

ALTERNATE TO PRACTICAL (ATP: Questions 41-50)

41. The given figure focuses on the magnified part of a Vernier callipers.



The name of the scale(s) shown in the magnified part is/ are

I. main scale
II. Vernier scale
III. circular scale

A. I only.
B. II only.
C. I and II.
D. II and III.

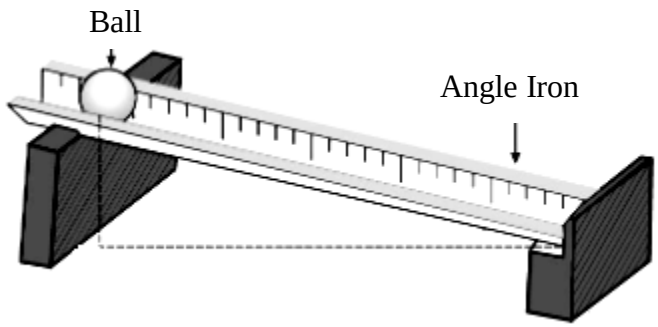
42. The instrument used to measure the diametre of a metallic wire is

A. metre scale.
B. spherometre.
C. screw gauge.
D. physical balance.

43. If a ball is moving vertically upward, then the magnitude of acceleration due to gravity for the ball will be

A. $-980\ m/s^2$
B. $-9.8\ m/s^2$.
C. $9.8\ m/s^2$.
D. $980\ m/s^2$.

44. The following apparatus is used in a physics lab to find acceleration of a rolling ball with a help of a graph.

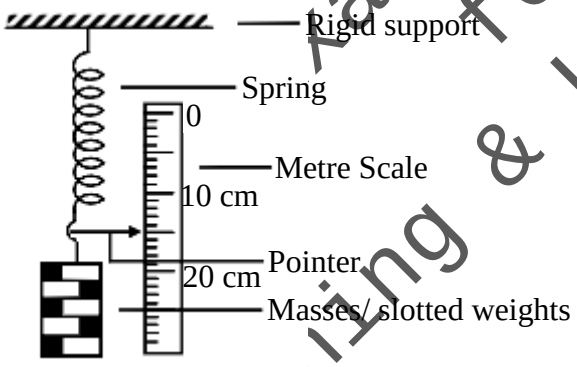


While drawing the graph 2S and t^2 are taken on *y*-axis and *x*-axis respectively.

Which of the following mathematical equations takes 2S and t^2 as a dependent and an independent variables to find the acceleration?

A. $S = vt$
B. $v_f = v_i + at$
C. $S = v_i t + ½ at^2$
D. $2aS = v_f^2 - v_i^2$

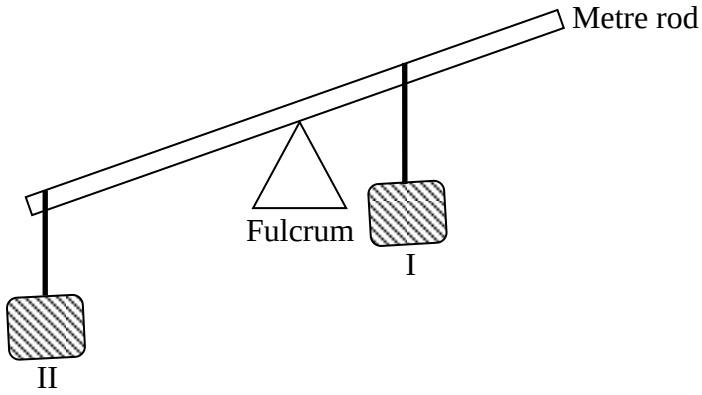
45. In the given mass-spring system, five slotted weights each of 50 g are hanged to a helical spring.



The reading on the metre scale is

A. 0 cm.
B. 10 cm.
C. 15 cm.
D. 20 cm.

46. The given figure shows two boxes, I and II, hanged on a metre rod that is fixed at a fulcrum.



A student has been given the task by his/ her teacher to balance the metre rod by keeping the position of the boxes unchanged on the rod. He/ she should

A. increase the weight of box I.
B. increase the weight of box II.
C. move the fulcrum towards box I.
D. equally increase the weight of both the boxes.

47. The following figures show uniform metre rod placed on a fulcrum in three different positions I, II and III.

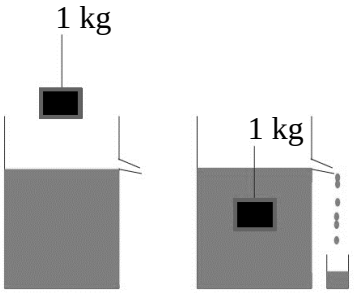
Forces of equal magnitudes are acting on each ends of the rod in the case of

A. II only.
B. III only.
C. I and II.
D. I and III.

48. In a science lab, a student heats up a metallic piece from 30°C to 80°C which requires thermal energy of 500 J. If mass of the piece is 1 kg, then the specific heat capacity of the metal will be

A. 4.5 J/kg°C.
B. 6.2 J/kg°C.
C. 10.0 J/kg°C.
D. 16.6 J/kg°C.

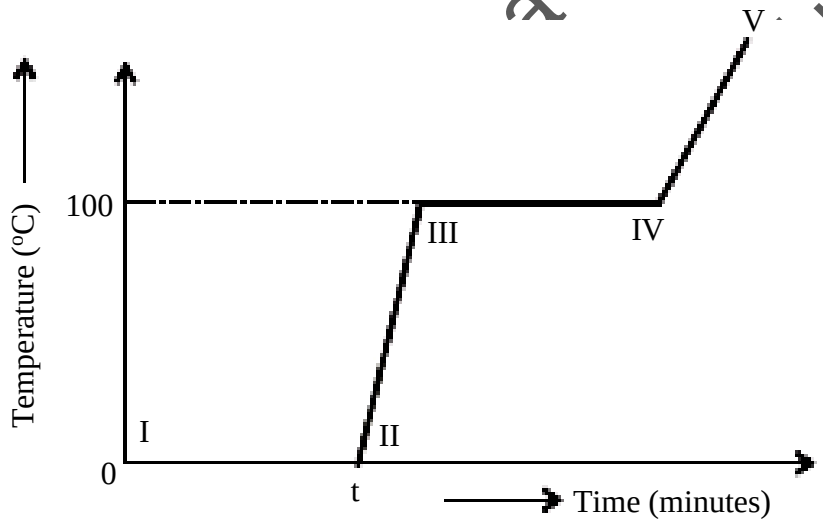
49. In a science lab, a student put a block in a beaker completely filled with water. He observed that some amount of water spills out from the beaker.



Which of the following principles/ laws depicts the given situation?

A. Pascal's law
B. Principle of moments
C. Archimedes' principle
D. Law of conservation of momentum

50. The given graph shows change in the states of ice on heating.



Which of the following statements is TRUE about the point V?

A. Water starts boiling
B. Ice converts into water
C. Water starts vaporising
D. Entire water converts into steam

END OF PAPER

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS IX

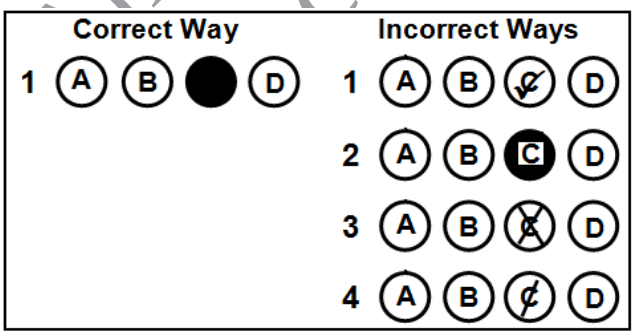
ANNUAL EXAMINATIONS (THEORY) 2023

Physics Paper I

Time: 1 hour 10 minutes Marks: 40

INSTRUCTIONS

1. Read each question carefully.
2. Answer the questions on the separate answer sheet provided. DO NOT write your answers on the question paper.
3. There are 100 answer numbers on the answer sheet. Use answer numbers 1 to 40 only.
4. In each question, there are four choices A, B, C, D. Choose ONE. On the answer grid, black out the circle for your choice with a pencil as shown below.



Candidate's Signature

5. If you want to change your answer, ERASE the first answer completely with a rubber, before blacking out a new circle.
6. DO NOT write anything in the answer grid. The computer only records what is in the circles.
7. You may use a simple calculator if you wish.

1. The number 123.4 can be written in scientific notation as

   A. 1.234×10^{-2}
   B. 12.34×10^{1}
   C. 1.234×10^{2}
   D. 0.1234×10^{3}

2. Candela is the S.I. unit of

   A. luminous intensity.
   B. amount of a substance.
   C. temperature of an object.
   D. electric current in a circuit.

3. The sum of 8.2×10^{4} and 4×10^{6} in scientific notation is

   A. 4.08×10^{6}
   B. 4.08×10^{10}
   C. 12.2×10^{6}
   D. 12.2×10^{10}

4. A 4 kg school bag is being carried by a student. The mass of the bag in grams (g) is equal to

   A. 4×10^{-3} g.
   B. 4×10^{-2} g.
   C. 4×10^{2} g.
   D. 4×10^{3} g.

5. The S.I. unit that represents a vector quantity is

   A. A
   B. K
   C. m^3
   D. m/s^2

6. If two forces of 3 N and 4 N are perpendicular to each other, then the magnitude of their resultant force will be

   A. $\sqrt{7}$ N.
   B. 5 N.
   C. 7 N.
   D. 25 N.

7. In a mountainous region where land sliding is common, a piece of rock suddenly falls from a certain height and strikes the ground in 3 s.

   The distance that this piece of rock covers to reach the ground is

   (**Note**: The value of acceleration due to gravity is 9.8 m/s^2.)

   A. 14.7 m.
   B. 44.1 m.
   C. 88.2 m.
   D. 176.4 m.

8. The given table shows the distance covered by a car in four different segments.

Segment	Distance Covered (m)
I	0-10
II	11-22
III	23-35
IV	36-49

   If the car takes same interval of time to cover all four segments, then the car

   A. is accelerating.
   B. is decelerating.
   C. has uniform velocity.
   D. comes to rest after each segment.

9. The physical quantity that is measured in metre per second (m/s) is

   A. time.
   B. velocity.
   C. distance.
   D. acceleration.

10. Inertia of a body depends on its

   A. mass.
   B. force.
   C. weight.
   D. velocity.

11. If a body of mass 10 kg is placed on the surface of the Earth, then the pull of the Earth on the body will be

(**Note**: The value of acceleration due to gravity is 9.8 m/s^2.)

A. 0.98 N.
B. 19.8 N.
C. 98 N.
D. 100 N.

12. A bullet is fired from a gun with the velocity of 550 m/s.

Which of the following is TRUE for the gun's backward recoil velocity (v)?

A. 0 m/s
B. 0 m/s < v < 550 m/s
C. 550 m/s
D. 550 m/s < v < 1100 m/s

13. In a throw ball champions trophy match, a player spins a metallic ball of mass 3 kg in a circle of radius 1 m with a velocity of 2 m/s before throwing the ball.

The magnitude of centripetal force applied by the player will be

A. 5 N.
B. 6 N.
C. 12 N.
D. 18 N.

14. An astronaut is sitting in a rocket on the Earth which is ready to launch to the Moon.

When the astronaut will reach to the Moon, his weight and mass would

	Weight	**Mass**
A	increase	remain the same
B	remain the same	increase
C	decrease	remain the same
D	remain the same	decrease

15. If a uniform metre rule is adjusted on a pivot at 50 cm mark, then it will

A. be balanced.
B. turn clockwise.
C. fall on the ground.
D. turn anti-clockwise.

16. If a student is unable to open a door, then which of the following condition(s) is/ are FALSE for the given situation?

I. The net force on the door is 0 N.
II. The applied force is greater than 0 N.
III. The force is applied on the hinges of the door.

A. I only
B. II only
C. I and III
D. II and III

17. If a body returns to its previous position after a slight jerk, then the body is said to be in

A. zero equilibrium.
B. stable equilibrium.
C. neutral equilibrium.
D. unstable equilibrium.

18. A sports racing car is made stable by

A. raising its height.
B. increasing its speed.
C. decreasing its width.
D. lowering its centre of gravity.

19. The mass of a student on the surface of the Earth is measured as 100 kg. If the Earth's mass is decreased, without changing in its radius, then the weight of the student will

(**Note**: The value of acceleration due to gravity is 9.8 m/s^2.)

A. become zero.
B. remain 980 N.
C. be less than 980 N.
D. be more than 980 N.

20. The gravitational force between two objects is measured as 200 N. If the distance between them decreases by half, then the new value of the force of gravitation will be

A. 50 N.
B. 100 N.
C. 400 N.
D. 800 N.

21. If an astronaut drops an object outside from a spaceship that is revolving in a circular orbit into the upper space, then the object will

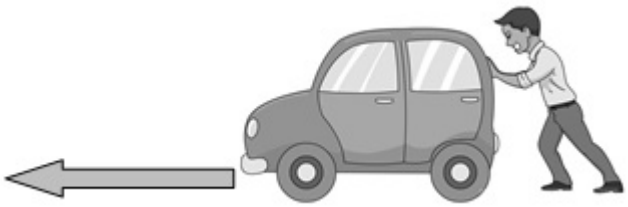
A. reach the Earth's surface.
B. escape from the solar system.
C. stick to the spaceship outer body.
D. continue to revolve in the circular orbit.

22. An object has a weight **W** when it is on the surface of a planet of radius **R**.

The gravitational force on the object after it has been moved to a distance of **2R** from the centre of the planet is

A. 2 W.
B. 4 W.
C. $\frac{1}{2}$ W.
D. $\frac{1}{4}$ W.

23. In the given figure, a person exerts force which causes the car to move forward.



This is an example of

A. torque.
B. efficiency.
C. work done.
D. rotatory motion.

24. Due to heavy rain, a mango of mass 0.3 kg drops from a tree in a mango orchard from a height of 40 m. Ignoring the air resistance, the potential energy of the mango is

(**Note**: The value of acceleration due to gravity as 9.8 m/s^2.)

A. 32.6 J.
B. 50.1 J.
C. 117.6 J.
D. 133.3 J.

25. A person lifts his luggage and climbs up the stairs. If he performs a work done of 10 J to climb up the stairs in 60 s, then the value of power of the person will be

A. 0.166 W.
B. 6 W.
C. 50 W.
D. 70 W.

26. A snow avalanche is a rapid flow of snow down a slope, such as hill or mountain.

When it occurs, then the potential energy it contains is converted into

I. chemical energy
II. kinetic energy
III. sound energy

A. I only.
B. II only.
C. I and II.
D. II and III.

27. All of the following are the examples of non-renewable energy sources EXCEPT

A. wind energy.
B. nuclear energy.
C. energy from fossil fuels.
D. energy from minerals and ores.

28. A cubical block of length x m each is completely immersed into water. The upthrust of water applied on the cubical block is

(**Note**: Take the acceleration due to gravity as 'g' m/s^2 and density of water as 'ρ' kg/m^3.)

A. ρ g x^2.
B. ρ g x^3.
C. ρ g x^4.
D. ρ g x^5.

29. A metal piece and a wooden log of equal size are thrown into the river. The piece of metal sinks whereas the wooden log does not. This is because the wooden log

A. has no density.
B. is denser than the metal piece.
C. is less dense than the metal piece.
D. has equal density as of the metal piece.

30. Children love to play with soap bubbles. If a soap bubble is stable in the air, then the atmospheric pressure will be

	Inside the Bubble	**Outside the Bubble**
A	more than outside	less than inside
B	less than outside	more than inside
C	equal to outside	equal to inside
D	equal to zero	more than zero

31. According to the kinetic theory of matter, a particle moves MORE rapidly in the state of

A. solid.
B. liquid.
C. plasma.
D. gaseous.

32. If a tunnel is passing underneath an ocean, then the water pressure applied on the walls of the tunnel will be

A. zero.
B. equal to the atmospheric pressure.
C. lower than the atmospheric pressure.
D. higher than the atmospheric pressure.

33. The 40 degree Centigrade in Fahrenheit scale is

A. 80 degree.
B. 104 degree.
C. 233 degree.
D. 313 degree.

34. After swimming on a hot summer day, our body feels cool. This is because

A. water is a poor conductor of heat.
B. air circulation is higher in the surrounding.
C. water evaporates by taking heat from the body.
D. body temperature is higher than the surrounding temperature.

35. The amount of heat absorbed by 2 kg of water is 4.512×10^6 J in process of changing from liquid to vapour. The heat requires to convert 3 kg of water into vapour will be

A. 1.128×10^6 J.
B. 2.256×10^6 J.
C. 4.512×10^6 J.
D. 6.768×10^6 J.

36. Same volume of copper, water and air are given equal amount of heat.

The CORRECT sequence of expansion from maximum to minimum is

A. copper, water, air.
B. water, air, copper.
C. air, copper, water.
D. air, water, copper.

37. In winter season, a metallic handle of a door will feel colder to touch than a wooden handle because metal has

A. low thermal conductivity.
B. high thermal conductivity.
C. low specific heat capacity.
D. high specific heat capacity.

38. The amount of radiation from a body depends upon all of the following factors EXCEPT

A. colour.
B. weight.
C. texture.
D. temperature.

39. White surfaces as compared to black surfaces made of same material reflects

A. less heat.
B. more heat.
C. zero amount of heat.
D. same amount of heat.

40. Stainless steel pans are usually provided with copper bottoms. The reason for this is that

A. pans made by copper appear colourful.
B. stainless steel is a good conductor of heat.
C. stainless steel is more expensive than copper.
D. copper is a better conductor of heat than stainless steel.

END OF PAPER

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS IX

ANNUAL EXAMINATIONS (THEORY) 2024

Physics Paper I

Time: 1 hour 10 minutes Marks: 40

INSTRUCTIONS

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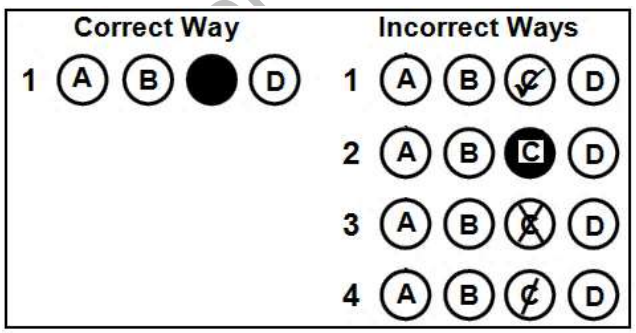


Candidate's Signature

5. If you want to change your answer, ERASE the first answer completely with a rubber, before blacking out a new circle.
6. DO NOT write anything in the answer grid. The computer only records what is in the circles.
7. You may use a simple calculator if you wish.

1. The total number of significant figures in 0.002022 are

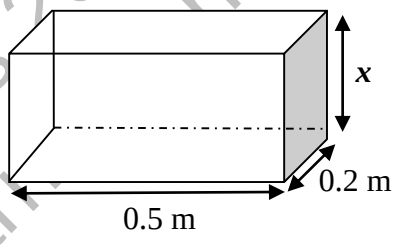
   A. 3
   B. 4
   C. 6
   D. 7

2. The number 0.0000509 can be represented in scientific notation as

   A. 5.09×10^{5}
   B. 5.09×10^{3}
   C. 5.09×10^{-3}
   D. 5.09×10^{-5}

3. If the volume of the given cuboid is 0.03 m^3, then the value of ***x*** will be

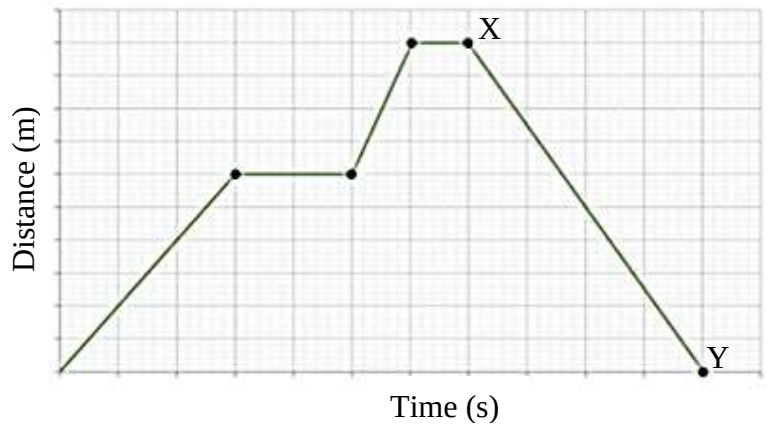
   A. 0.1 m.
   B. 0.2 m.
   C. 0.3 m.
   D. 0.5 m.



4. The total number of derived quantities involved in the equation $S = v_i t + ½ at^2$ is

   A. one.
   B. two.
   C. three.
   D. four.

5. The given graph depicts that a person is walking along a straight road.



   Which of the following options CORRECTLY describes the motion of the person from point X to Y?

   A. The person is moving towards the starting point at a constant speed.
   B. The person is moving towards the starting point with a variable speed.
   C. The person is moving away from the starting point at a constant speed.
   D. The person is moving away from the starting point with a variable speed.

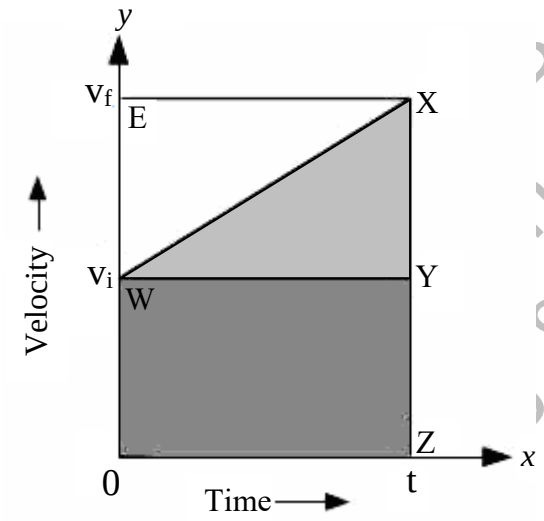
6. A force of 10 N is acting on a body along *x*-axis. The value of its *y*-component will be

   A. 0 N.
   B. 5 N.
   C. 10 N.
   D. 20 N.

7. A body starts from rest and accelerates to a velocity of 100 m/s. If it covers a distance of 50 m, then its acceleration will be

   A. 1 m/s^2.
   B. 2 m/s^2.
   C. 100 m/s^2.
   D. 200 m/s^2.

8. The below given picture shows the velocity-time graph for the motion of a body.



   The slope of the line segment WX in the above graph shows the

   A. acceleration.
   B. displacement of the body.
   C. total distance covered by the body.
   D. total time taken for the motion of the body.

9. If a motorcyclist covers a displacement of 150 m in 10 s, then his/ her velocity will be

   A. 15 m/s.
   B. 140 m/s.
   C. 160 m/s.
   D. 1500 m/s.

10. Saif and Kaif are in a basketball match. During the game, Saif, holding the ball of mass 0.6 kg running with a velocity of 3 m/s, collides with the defender, Kaif, who is at rest position, and both start moving together.

The type of collision and value of momentum of the ball will be

(**Note**: Saif and Kaif both have equal weights.)

	Type of Collision	**Momentum of the Ball**
A	Elastic	1.8 N.s
B	Inelastic	1.8 N.s
C	Elastic	0.2 N.s
D	Inelastic	0.2 N.s

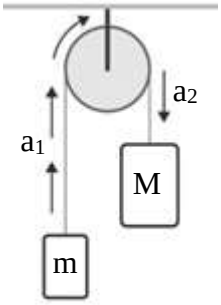
11. Which of the following options CORRECTLY depicts the effect of friction on the speed of an object while keeping the force constant?

	Friction	**Speed**
A	More	Less
B	Unaffected	Less
C	Less	More
D	Less	Unaffected

12. Two unequal masses are suspended with an inextensible string around a pulley as shown in the given diagram.

(**Note**: Here masses are 'm' and 'M', such that 'm' is less than 'M'.)

Based on the given diagram, the relationship between the magnitudes of the acceleration a_1 and a_2 is



A. $a_1 = a_2 \neq 0$
B. $a_1 > a_2$
C. $a_1 < a_2$
D. $a_1 = a_2 = 0$

13. During accidents, airbags in cars protect the passengers from hitting the dashboards by increasing the

A. momentum.
B. acceleration.
C. time of contact.
D. impact of collision.

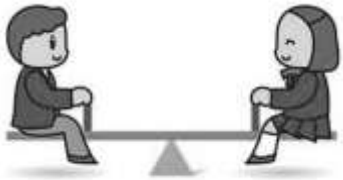
14. If the mass of an object is 0.7 kg, then its weight will be

(**Note**: Take the value of acceleration due to gravity 'g' as 10 m/s^2.)

A. 0.07 N.
B. 0.7 N.
C. 7.0 N.
D. 70.0 N.

15. Based on the given image, the net torque of the seesaw will be equal to

A. zero.
B. one.
C. two.
D. infinite.



16. If a body obeys the first condition of equilibrium, then which of the following options will equate to zero?

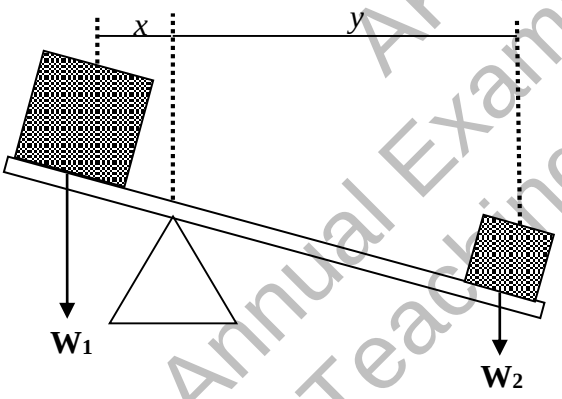
    I. Linear acceleration
    II. Vector sum of all the forces
    III. Vector sum of all the torques

    A. II only
    B. III only
    C. I and II
    D. II and III

17. If a force of 4 N is applied by a student on a door handle and the moment of force is 16 Nm, then the distance of the pivot from the point of applied force is

    A. 4 m.
    B. 12 m.
    C. 20 m.
    D. 64 m.

18. In the given diagram, two weights '$\mathbf{W_1}$' and '$\mathbf{W_2}$' are placed on a rod whereas ($\mathbf{W_1} > \mathbf{W_2}$). For keeping the rod in the equilibrium position, than



    I. increase '$\mathbf{W_2}$' and decrease 'x'
    II. increase '$\mathbf{W_2}$' and 'x' remain same
    III. increase 'x' and '$\mathbf{W_2}$' remain the same

    A. I only.
    B. III only.
    C. I and II.
    D. II and III.

19. A mountaineer has taken a bag of emergency items on his back to the Mount Everest.

    On reaching the peak of the Mount Everest, the weight of the bag will

    A. increase.
    B. decrease.
    C. become zero.
    D. remain the same.

20. If two metallic spheres have an equal mass of 10 kg each and the distance between their centres is 0.5 m, then the gravitational force of attraction between the spheres will be

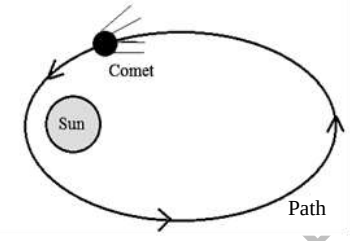
(**Note**: The value of the Gravitational constant is 6.67×10^{-11} Nm^2/kg^2.)

A. 6.670×10^{-9} N.
B. 1.334×10^{-9} N.
C. 2.668×10^{-4} N.
D. 2.668×10^{-8} N.

21. The weight is a force that results from the gravitational attraction between an object and the Earth. The direction of this force will be

A. upward.
B. forward.
C. backward.
D. downward.

22. The given diagram shows the path followed by a comet when it reaches close to the sun. The shape of the path is



A. elliptical.
B. spherical.
C. parabolic.
D. hyperbolic.

23. If the kinetic energy of a 200 kg object is 10,000 J, then the velocity of the object will be

A. 5.0 m/s.
B. 7.07 m/s.
C. 10.0 m/s.
D. 100.0 m/s.

24. A tugboat applies a force of 100 N to tow a container ship from the shore to the deep sea. The rope that connects the tugboat to the ship is parallel to the surface of the water.

If the tugboat displaces the container ship by 500 m, then the amount of work done by the tugboat will be

(**Note**: Suppose that the seawater current is negligible.)

A. 5 J.
B. 400 J.
C. 600 J.
D. 50000 J.

25. Consider the given image.

All of the following types of renewable energy sources are shown in the given picture EXCEPT

A. solar.
B. wind.
C. hydel.
D. biomass.

26. An electric heater of 500 W consumes 50 J of energy to warm a room. The time required by the heater to warm the room will be

A. 0.1 s.
B. 10 s.
C. 550 s.
D. 25000 s.

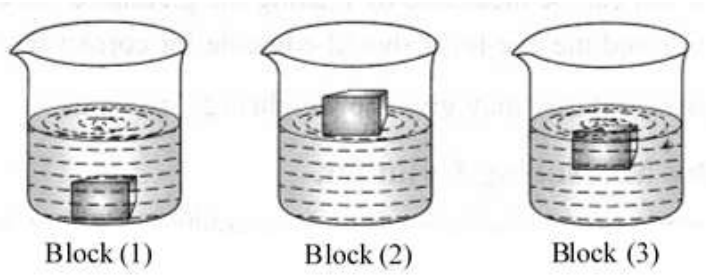
27. If a person exerts a force that causes a car to move forward, then this is an example of

A. power.
B. efficiency.
C. work done.
D. rotatory motion.

28. According to the kinetic molecular theory of matter, the distance among the molecules of matter in the liquid state is

A. equal to solid state.
B. more than solid state.
C. equal to gaseous state.
D. more than gaseous state.

29. The given diagram shows three different blocks of insoluble material placed in three beakers that are partially filled with water.



Which of the given block(s) is/ are LESS denser than water?

A. Block (1) only
B. Block (2) only
C. Block (1) and Block (3)
D. Block (2) and Block (3)

30. When the upthrust on a moving cargo ship becomes equal to its weight, then it will

A. sink.
B. float.
C. drop its load.
D. lose its balance.

31. Which of the following options depicts the atmospheric pressure at sea level and on the mountain?

	Atmospheric Pressure at Sea Level	**Atmospheric Pressure on the Mountain**
A	Low	High
B	Low	Low
C	High	High
D	High	Low

32. The property of matter by which it restores its length, shape or volume after the removal of the deforming force is called

A. strain.
B. stress.
C. elasticity.
D. elastic limit.

33. The CORRECT relation between Celsius and Fahrenheit is

A. $1^oC > 1^oF$.
B. $1^oC < -32^oF$.
C. $-32^oC > 1^oF$.
D. $32^oC < 32^oF$.

34. The amount of heat energy required to change a substance from solid into liquid state at its melting point without any change in its temperature is known as

A. heat capacity.
B. latent heat of fusion.
C. specific heat capacity.
D. latent heat of vapourisation.

35. If the temperature of a substance is 20ºC, then its temperature in Kelvin scale will be

A. – 253 K.
B. – 6.66 K.
C. 68 K.
D. 293 K.

36. A metal cap on a glass bottle can easily be opened when hot water is poured over it. This is because

A. metal and glass do not expand.
B. metal and glass expand equally.
C. metal expands less and glass expands more.
D. metal expands more and glass expands less.

37. With reference to heat transfer in solids, the CORRECT statement is that heat

A. flows from lower to higher temperature.
B. flows from higher to lower temperature.
C. is independent of the size of the surface of solids.
D. is independent of the temperature of the surroundings.

38. The CORRECT option that identifies the processes of heat transfer in which medium is required and not required is

	Process in which Medium is Required	**Process in which Medium is NOT Required**
A	conduction	convection
B	convection	conduction
C	conduction	radiation
D	radiation	conduction

39. An example of a good conductor of heat is a

A. glass door.
B. frying pan.
C. wooden door.
D. leather jacket.

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CLASS IX

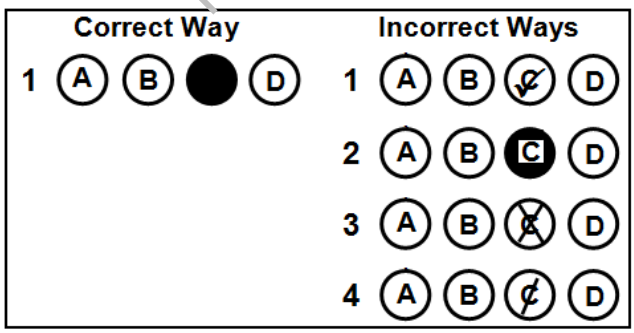
ANNUAL EXAMINATIONS (THEORY) 2025

Physics Paper I

Time: 1 hour 10 minutes Marks: 40

INSTRUCTIONS

1. Read each question carefully.
2. Answer the questions on the separate answer sheet provided. DO NOT write your answers on the question paper.
3. There are 100 answer numbers on the answer sheet. Use answer numbers 1 to 40 only.
4. In each question there are four choices A, B, C, D. Choose ONE. On the answer grid black out the circle for your choice with a pencil as shown below.



Candidate's Signature

5. If you want to change your answer, ERASE the first answer completely with a rubber, before blacking out a new circle.
6. DO NOT write anything in the answer grid. The computer only records what is in the circles.
7. You may use a simple calculator if you wish.

1. Which of the following is a base physical quantity?

   A. Time
   B. Force
   C. Density
   D. Velocity

2. The number 0.012345678 can be represented in scientific notation as

   A. 12.345678×10^{2}
   B. 1.2345678×10^{2}
   C. 1.2345678×10^{-2}
   D. 12.345678×10^{-2}

3. All of the following quantities can be measured by using Vernier callipers EXCEPT

   A. depth.
   B. length.
   C. weight.
   D. diametre.

4. The number of significant figures in $(25.01)^{2}$ is

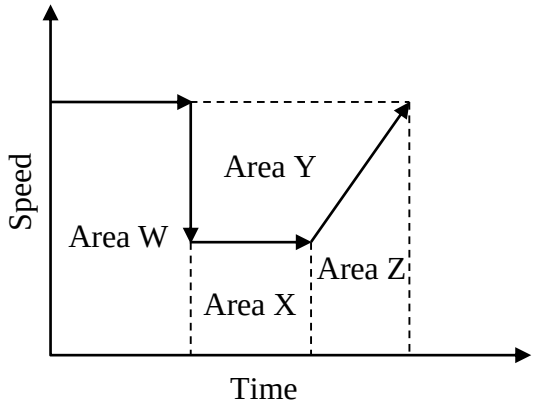
   A. 2
   B. 3
   C. 4
   D. 5

5. In a classroom, a student got up from his/ her desk and walked 3 m ahead towards his/ her friend's desk. He/ she collected a book and walked 3 m back to his/ her own desk.

   The total displacement of the student would be

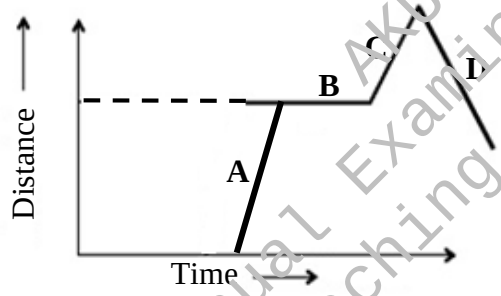
   A. 0 m.
   B. 3 m.
   C. 6 m.
   D. 9 m.

6. In the given speed-time graph, the sum of areas representing the total distance covered by a body is



A. W + Y + Z
B. W + X + Y
C. W + X + Z
D. W + X + Y + Z

7. In the given distance-time graph, the line that represents a body in rest position is



8. All three equations of motion are applicable on bodies having uniform

A. speed.
B. velocity.
C. momentum.
D. acceleration.

9. A cricket ball is hit in such a way that it travels vertically upward.

What will be its initial velocity, if it attains the maximum height in 3s?

(**Note**: Take the value of acceleration due to gravity as 9.8 m/s^2.)

A. 3.2 m/s.
B. 6.8 m/s.
C. 12.8 m/s.
D. 29.4 m/s.

10. A force of 100 N acts on an object for 10 s. If the velocity of the object is 50 m/s, then the amount of momentum in the object will be

    A. 10 Ns.
    B. 50 Ns.
    C. 100 Ns.
    D. 1000 Ns.

11. If a body is taken to the surface of the moon, then which of the following physical quantities of the body will change?

    A. Mass
    B. Length
    C. Weight
    D. Density

12. In a tug of war, an inextensible rope is pulled by two teams in opposite direction over a central line. Each team has four players and each player is applying 10 N force on the rope.

    During the game, if the rope is balanced over the central line, then the tension in the rope will be

    A. 0 N.
    B. 20 N.
    C. 40 N.
    D. 80 N.

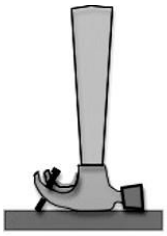
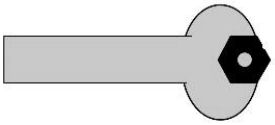
13. A passenger getting down from a moving bus falls forward. This is due to the

    A. inertia.
    B. couple.
    C. friction.
    D. moment.

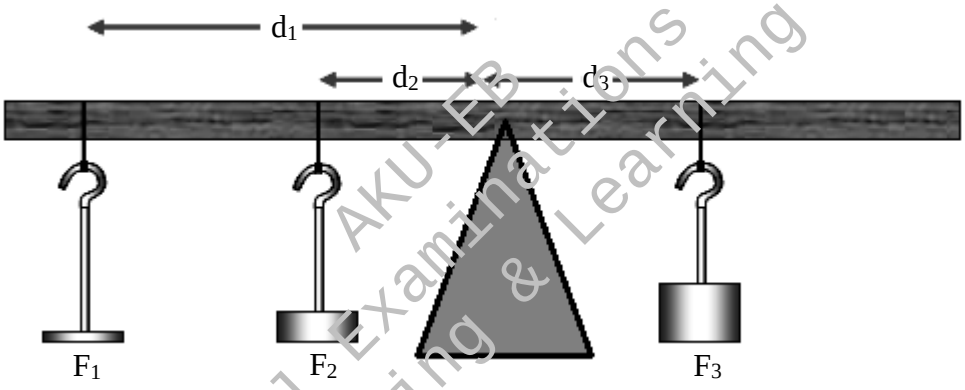
14. If an object moves with the help of wheels from one point to another point on a rough surface, then the type of friction between wheels and surface is

    A. static friction.
    B. rolling friction.
    C. sliding friction.
    D. kinetic friction.

15. All of the following are the examples of turning effect of force EXCEPT

			
A	B	C	D

16. In the given figure, a uniform metre rod is balanced at its centre by a fulcrum.

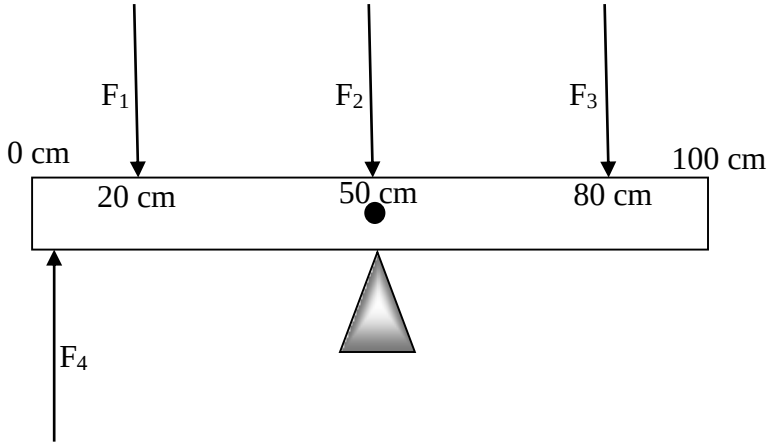


The distances d_1, d_2 and d_3 are equal to 10 cm, 2 cm and 5 cm respectively. If (F_1) and (F_2) are equal to 2 N and 5 N respectively, then the magnitude of (F_3) will be

A. 2 N.
B. 4 N.
C. 6 N.
D. 10 N.

17. Four different forces (F_1, F_2, F_3 and F_4) of the same magnitude are acting on the given metre scale.

Which forces produces the maximum torque?



A. F_1
B. F_2
C. F_3
D. F_4

18. A point where the whole weight of a body acts vertically downward is called the

A. centre of mass.
B. point of contact.
C. centre of gravity.
D. point of applied force.

19. Which of the following correctly describes the direction of the gravitational field at a point?

A. It is parallel to the object that creates the field.
B. It is perpendicular to the object that creates the field.
C. It always points away the object that creates the field.
D. It always points towards the object that creates the field.

20. If the gravitational acceleration on the surface of the Earth is given, then the additional information required to determine the mass of the Earth using the law of gravitation would be

I. radius of the Earth
II. density of the Earth
III. universal gravitational constant (G)

A. I only.
B. II only.
C. I and III.
D. II and III.

21. If an astronaut attains a height equal to the radius of the Earth, then his weight related to the Earth surface will become

A. half.
B. twice.
C. one-third.
D. one-fourth.

22. An artificial satellite is revolving around the Earth in a specific orbit. (F_1) is the magnitude of the force exerted by the Earth on a satellite and (F_2) is the magnitude of the force exerted by the satellite on the Earth.

Which of the following statements is TRUE for the given condition?

A. $F_1 = F_2$
B. $F_1 = -F_2$
C. $F_1 < F_2$
D. $F_1 > F_2$

23. A traffic police car lifter lifts a car that was parked in a no parking area. The lifter lifts the car upto 0.5 m in the upward direction and the applied force is 5000 N. The work done on the car will be

A. 2500 J.
B. 5000 J.
C. 10000 J.
D. 25000 J.

24. During a football match, a strong wind shakes and loose a football of mass 0.40 kg that was stuck in a tree at a height of 20 m. Ignoring air resistance, the potential energy of the football when it was stuck in the tree was

(**Note**: Take the value of acceleration due to gravity as 9.8 m/s^2.)

A. 19.2 J.
B. 31.4 J.
C. 39.2 J.
D. 78.4 J.

25. All of the following are the examples of renewable energy sources EXCEPT

A. solar energy.
B. wind energy.
C. nuclear energy.
D. geothermal energy.

26. The kinetic energy of an object depends on

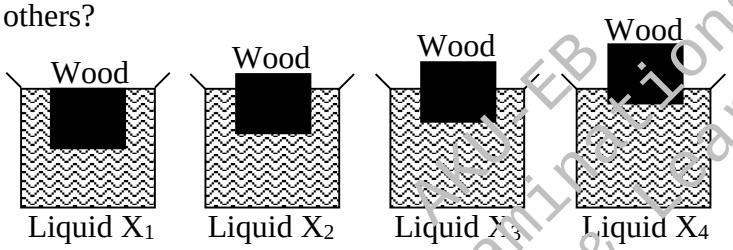
A. density.
B. velocity.
C. acceleration.
D. temperature.

27. If the mass of an elevator is 2000 kg, then the work done to raise the elevator to a height of 50 m in 20 seconds will be

(**Note**: Take the value of acceleration due to gravity 'g' as 9.8 m/s^2.)

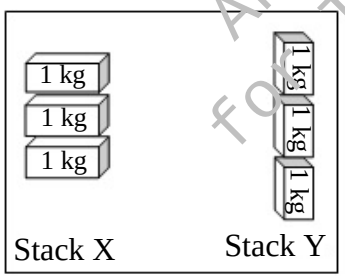
A. 4 J.
B. 400 J.
C. 98000 J.
D. 980000 J.

28. A piece of wood is shown floating in four different liquids. Which liquid is denser than the others?



A. X_1
B. X_2
C. X_3
D. X_4

29. Consider the given figure in which bricks of 1 kg are stacked in different positions.



Comparing stack X with the stack Y, the CORRECT statement is that

A. force of stack Y is greater than stack X.
B. force of stack X is greater than stack Y.
C. pressure of stack X is greater than stack Y.
D. pressure of stack Y is greater than stack X.

30. As compared to sea level, the atmospheric pressure on mountains is

A. equal.
B. lower.
C. higher.
D. unpredictable.

31. The height of Tarbela dam is 143 m.

Assuming that the dam is filled with water and the density of water is 1000 kg/m^3. The value of acceleration due to gravity is 10 m/s^2, the pressure exerted by water at the base of the dam will be

A. 1.43×10^4 Pa.
B. 1.43×10^5 Pa.
C. 1.43×10^6 Pa.
D. 1.43×10^7 Pa.

32. The weight of a ship is equal or less than the upthrust of the water acting on it.

The statement that will be TRUE for the ship is that it will

A. sink into the water.
B. float on the surface of water.
C. initially float but then slowly sink into the water.
D. initially sink but then slowly come to the surface of water.

33. The body temperature of a patient is recorded as 101^{o}F. This temperature is equal to

A. 38.3^{o}C.
B. 43.3^{o}C.
C. 57.0^{o}C.
D. 69.0^{o}C.

34. If 4 kg of water cools from 80^{o}C to 30^{o}C, it loses energy

(**Note**: Take the specific heat of water as 4.2 J/g°C.)

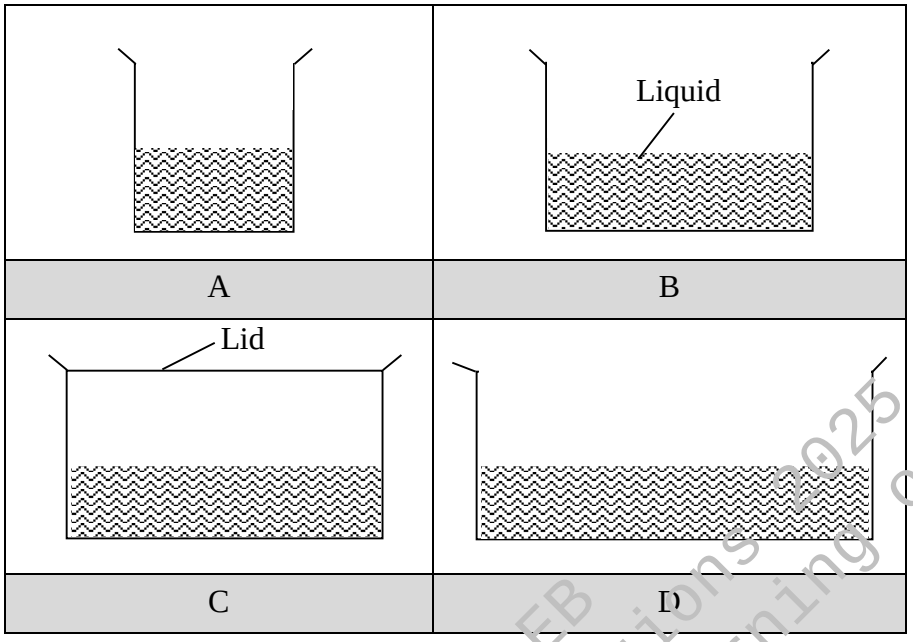
A. 840 J.
B. 8400 J.
C. 84000 J.
D. 840000 J.

35. The amount of heat required to convert 100 g of ice at 0°C to water at 0°C is

(**Note:** Take the latent heat of fusion of ice as 334 J/g.)

A. 33.4 J.
B. 334 J.
C. 3340 J.
D. 33400 J.

36. The vessel that will cause a liquid to evaporate most quickly when containing equal amounts of the same liquid is



37. All of the following show transfer of heat by convection EXCEPT the use of

A. fans to dry off sweat.
B. hot air to fly off air balloons.
C. gas heaters to heat up rooms.
D. heating pads to relax muscles.

38. The vacuum in the thermos bottle prevents heat transfer by

I. radiation
II. conduction
III. convection

A. I only.
B. II only.
C. I and III.
D. II and III.

39. The characteristic that should be present in a surface to protect it from infrared radiation is

A. good absorbers and good emitters.
B. good absorbers and poor emitters.
C. poor absorbers and good emitters.
D. poor absorbers and poor emitters.

40. The surface that is the good radiator of heat is

A. black.
B. white.
C. green.
D. silver.

END OF PAPER

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CLASS IX

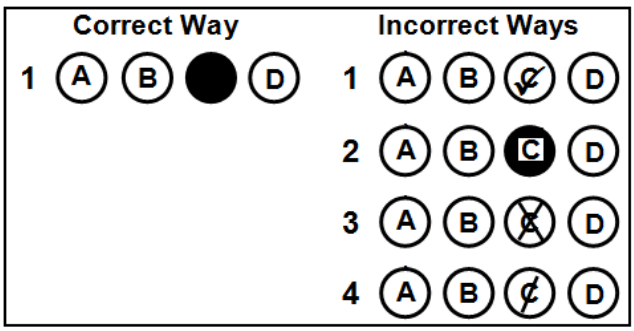
MODEL EXAMINATION PAPER 2026 AND ONWARDS

Physics Paper I

Time: 1 hour 10 minutes Marks: 40

INSTRUCTIONS:

1. Check your name and school information on the question paper and Optical Mark Recognition (OMR) sheet. Sign on both if the information is correct.
2. Read each question carefully.
3. Answer all questions on the provided OMR sheet within the allotted time. DO NOT mark your answers on the question paper.
4. There are 100 answer numbers on the OMR sheet. Use answer numbers 1 to 40 only.
5. Each question has four choices: A, B, C, and D. Choose ONE correct answer only. On the OMR sheet, completely fill in the circle corresponding to your choice with a pencil as shown in the example below.



Candidate's Signature

6. If you want to change your answer, ERASE the first answer completely with an eraser, before filling in the new circle. Ensure your marks are dark and clear. Do not make stray marks or leave incomplete fillings as the OMR machine ONLY records what is in the circles.
7. Do not fold, tear, or damage the OMR sheet. Damaged sheets may be scanned incorrectly.
8. You may use a simple calculator if you wish.

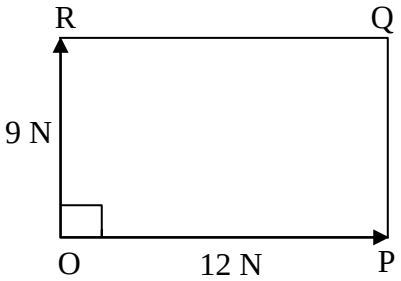
1. If the volume of one cube is 1.76 cm^3, then the volume of twenty-one such cubes rounded off to three significant figures is

   A. 36.0 cm^3.
   B. 36.9 cm^3.
   C. 36.6 cm^3.
   D. 37.0 cm^3.

2. The number 123.4 can also be written in scientific notation as

   A. 0.1234×10^{-3}
   B. 1.234×10^{-2}
   C. 1.234×10^{2}
   D. 12.34×10^{3}

3. Two forces act at the right angle, as shown in the given figure. What will be the magnitude and direction of the resultant force?



	Magnitude	Direction
A	15 N	along $\overrightarrow{OQ}$
B	15 N	along $\overrightarrow{PR}$
C	21 N	along $\overrightarrow{OQ}$
D	21 N	along $\overrightarrow{PR}$

4. The type of motion that takes place in a simple pendulum is

   A. linear.
   B. circular.
   C. random.
   D. vibratory.

5. A ball is dropped from the top of a building. If it takes 4 s to reach the ground, then the ball strikes the ground with the speed of

   (**Note**: Use the value of acceleration due to gravity 'g' as 10 m/s^2.)

   A. 10 m.
   B. 20 m.
   C. 30 m.
   D. 40 m.

6. Consider, the distance between two towns **X** and **Y** is 75 km. A person starts his/ her journey from town **X** with a constant velocity of 40 km/h and covers a distance of 20 km, then takes a break of 30 minutes on a hotel and continue his/ her journey and covers the rest of the distance in 15 minutes.

   The average velocity of the person will be

   A. 40 km/h.
   B. 60 km/h.
   C. 80 km/h.
   D. 100 km/h.

7. The given table shows the distance covered by a car on a straight road in four different segments.

Segment	Distance Covered (m)
I	0-10
II	11-22
III	23-35
IV	36-49

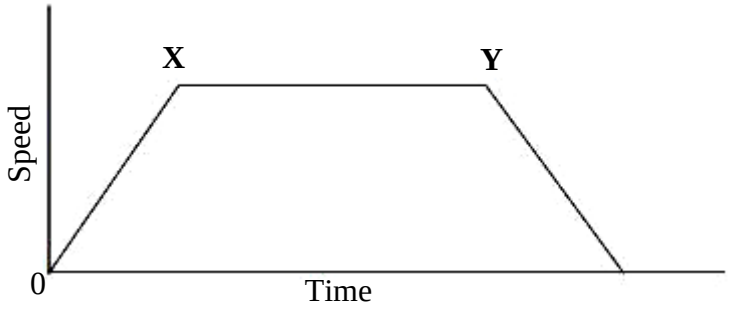
   If the car takes same interval of time to cover all four segments, then the car

   A. is accelerating.
   B. is decelerating.
   C. has uniform velocity.
   D. comes to rest after each segment.

8. The physical quantity that is measured in metre per square second (m/s^2) is

   A. time.
   B. velocity.
   C. distance.
   D. acceleration.

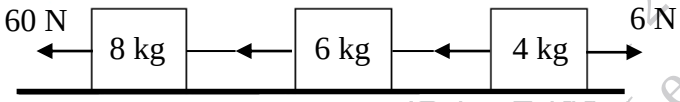
9. Consider the given speed-time graph.



The speed of an object from point **X** to **Y** is

A. decreasing.
B. increasing.
C. uniform.
D. zero.

10. A 60 N force pulls a system of three masses on a surface as shown in the given figure.



The acceleration of this system of masses is

A. 2 m/s^2.
B. 3.3 m/s^2.
C. 6 m/s^2.
D. 7.5 m/s^2.

11. An astronaut is sitting in a rocket on Earth which is ready to launch to the Moon.

When the astronaut will reach the Moon, his/ her weight and mass would

	Weight	**Mass**
A	increase	remain the same
B	remain the same	increase
C	decrease	remain the same
D	remain the same	decrease

12. Inertia of a body depends on its

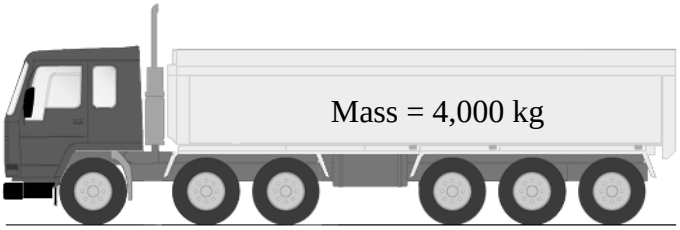
A. mass.
B. force.
C. weight.
D. velocity.

13. A bullet is fired from a gun with the velocity of 550 m/s.

    Which of the following is TRUE for the gun's backward recoil velocity (v)?

    A. 0 m/s
    B. 0 m/s < v < 550 m/s
    C. 550 m/s
    D. 550 m/s < v < 1100 m/s

14. The momentum of a moving truck as shown in the given diagram is



Velocity = 22 m/s

    A. 3,978 kg.m/s.
    B. 4,022 kg.m/s.
    C. 88,000 kg.m/s.
    D. 968,000 kg.m/s.

15. In a boxing match, a boxer **X** quickly moves his head backward when he observes he is going to receive a punch on his head. This motion gives advantage to boxer **X** because it

    A. decreases the momentum and increases the force.
    B. increases the momentum and decreases the force.
    C. increases the span of time for contact which decreases the force.
    D. decreases the span of time for contact which increases the force.

16. An object of mass 0.5 kg hits a wall with a velocity of 10 m/s and bounced back with the velocity of 10 m/s.

    The change in the momentum of the object will be

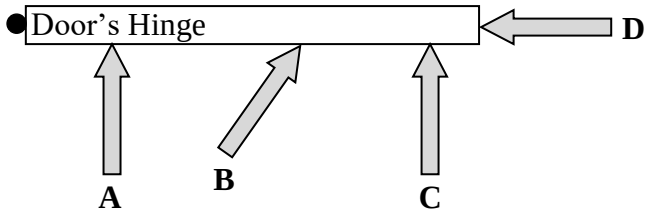
    A. 0 Ns.
    B. 5 Ns.
    C. 10 Ns.
    D. 20 Ns.

17. The crumple zones are used as a safety feature in cars because they

    A. decrease the time taken to bring the car to rest, which decreases the force exerted on the passengers.
    B. increase the time taken to bring the car to rest, which decreases the force exerted on the passengers.
    C. allow the forces on the passengers to be as greater as possible.
    D. allow the forces on the passengers to be constant.

18. Four forces are acting at different points on a door as mentioned in the given figure.

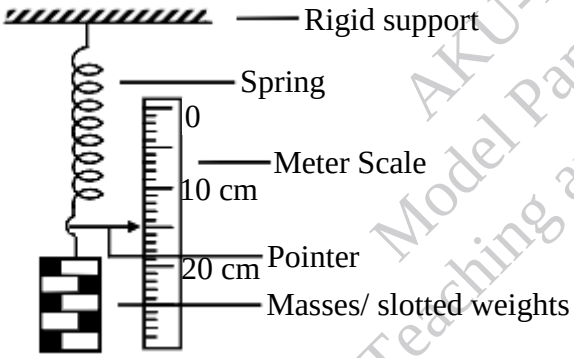
The point that creates the maximum torque on the door will be



19. A sports racing car is made stable by

A. raising its height.
B. increasing its speed.
C. decreasing its width.
D. lowering its centre of gravity.

20. In the given mass-spring system, five slotted weights each of 50 g are hanged on the helical spring.



If one slotted weight is removed from the spring, then the reading on the meter scale will be

(**Note**: There is no systematic error in the instrument.)

A. 3 cm.
B. 6 cm.
C. 12 cm.
D. 15 cm.

21. The sequence in which conversion of energy takes place at fossil fuel power stations is

A. heat $\rightarrow$ light $\rightarrow$ kinetic
B. heat $\rightarrow$ light $\rightarrow$ electrical
C. heat $\rightarrow$ electrical $\rightarrow$ kinetic
D. heat $\rightarrow$ kinetic $\rightarrow$ electrical

22. A car travels a distance of 150 m in the direction of a constant force of 50 N. The work done on the car is

    A. 3 J.
    B. 100 J.
    C. 200 J.
    D. 7500 J.

23. A car has stopped after screeching to avoid a crash with a van.

    With reference to the given situation, the kinetic energy of the car will then be converted into

    A. sound energy only.
    B. heat and sound energy.
    C. heat and potential energy.
    D. potential and sound energy.

24. If a loading truck has an output of 3600 J and its efficiency is 50%, then the input provided to the truck will be

    A. 1800 J.
    B. 3600 J.
    C. 7200 J.
    D. 10800 J.

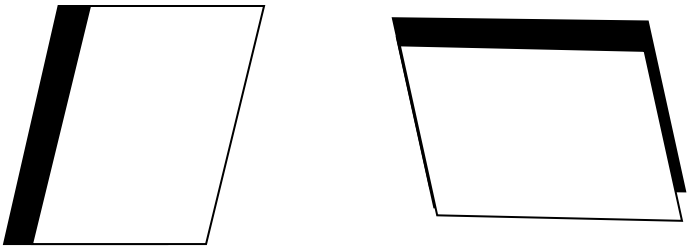
25. The kinetic energy of a 0.5 kg bullet moving with velocity of 500 m/s is

    A. 125 J.
    B. 250 J.
    C. 62500 J.
    D. 125000 J.

26. If a person releases 500 J of energy by walking along a track in 125 seconds, then the required average muscular power is

    A. 0.25 W.
    B. 4.0 W.
    C. 375 W.
    D. 625 W.

27. A book is placed on a table with two different positions as shown in the given figure.

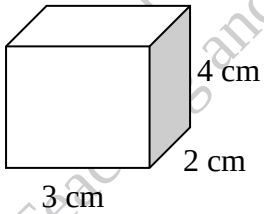


Vertical Position Horizontal Position

Which of the following options correctly compares the force and pressure on the book at different positions?

	Force	Pressure
A	Different at different positions	Different at different positions
B	Different at different positions	Same at different positions
C	Same at different positions	Different at different positions
D	Same at different positions	Same at different positions

28. If the mass of the given metallic cube is found to be 24 g, then the density of the cube will be



A. 2 g/cm^3.
B. 6 g/cm^3.
C. 8 g/cm^3.
D. 12 g/cm^3.

29. Compared to the sea level, the atmospheric pressure on mountains is

A. zero.
B. equal.
C. lower.
D. higher.

30. In a magic show, a performer lies down on a bed of nails without any injury. However, when the same performer steps on a single nail, it goes right through his foot.

With reference to the given situation, which of the following statements is TRUE?

A. The area is same in both the cases, but more force is applied on the bed of nails.
B. The force remains the same, but more pressure is applied on the bed of nails.
C. More force is exerted on a single nail than on the entire bed of nails.
D. Less force is exerted on a single nail than on the entire bed of nails.

31. In a clinical thermometer, mercury does NOT fall back to the bulb because

A. it is less in quantity.
B. it is in a capillary tube.
C. of the shape of the thermometer's bulb.
D. of the constriction in the capillary tube.

32. The escape of high kinetic energy molecules in the form of vapours from the surface of a liquid without heating is known as

A. fusion.
B. boiling.
C. evaporation.
D. condensation.

33. If an inflated tyre of a car bursts, then the temperature of air that will escape from the tyre

A. increases.
B. decreases.
C. becomes 100°C.
D. becomes –100°C.

34. If the temperature of a substance is 20°C, then its temperature in Kelvin scale will be

A. – 253 K.
B. – 6.66 K.
C. 68 K.
D. 293 K.

35. The amount of heat absorbed by 2 kg of water is 4.512×10^6 J in process of changing from liquid to vapour. The heat requires to convert 3 kg of water into vapour will be

A. 1.128×10^6 J.
B. 2.256×10^6 J.
C. 4.512×10^6 J.
D. 6.768×10^6 J.

36. When a small piece of red-hot iron is dropped into a vessel of boiling water, the temperature of water will

A. increase.
B. decrease.
C. remain constant.
D. become same as iron.

37. Radiations incident on a surface increases its temperature.

Which of the following characteristics should be present in a surface that can protect itself MOST effectively against radiation?

A. Poor absorber and poor emitter
B. Poor absorber and good emitter
C. Good absorber and poor emitter
D. Good absorber and good emitter

38. Which of the following statements is FALSE about heat transfer?

A. Conduction is poor in gases.
B. The hotter the substance, the less will be the radiation.
C. A cold substance attains the temperature of its surroundings.
D. As a substance absorbs heat, its temperature always increases.

39. The statement that describes the significance of time in Physics is that it is

A. related to the concept of matter only.
B. important for the biological processes only.
C. relevant to the historical and geographical studies.
D. a dimension of measured events that occur in the universe.

40. The statement that signifies the technological advancements in modern Physics is that it

A. provides theoretical knowledge only.
B. enables the curing of harmful diseases.
C. replaces the current engineering disciplines.
D. focuses on new discoveries through research.

END OF PAPER