AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS IX

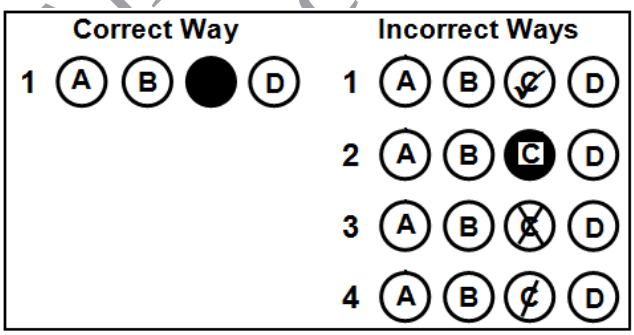
ANNUAL EXAMINATIONS (THEORY) 2023

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

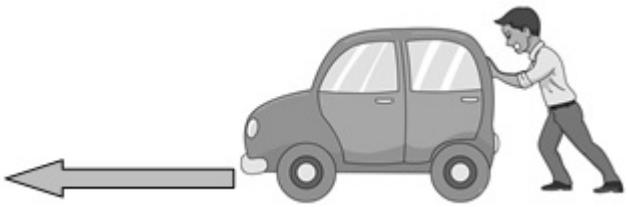
A. reach the Earth's surface.
B. escape from the solar system.
C. stick to the spaceship outer body.
D. continue to revolve in the circular orbit.

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

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