

Class : 10th STD  
Subject: SCIENCE  
Question : Type A



NEW BHARATH MATRIC HR SEC SCHOOL

THIRUVARUR

Date : 27-12-2019  
Time : 2.30 Hrs  
Roll No:  
Maximum Marks: 221

Instructions:

(i) Check the question paper for fairness of printing. If there is any lack of fairness, inform the hall supervisor immediately.

(ii) Use Black or Blue ink to write and pencil to draw diagram

**Choose correct Answer:  
ANSWER ALL QUESTIONS**

**PART - I**

**67 x 1 = 67**

1. Inertia of a body depends on?
  - a) weight of the object
  - b) acceleration due to gravity of the planet
  - c) mass of the object
  - d) both a & b
2. Impulse is equals to?
  - a) rate of change of momentum
  - b) rate of force and time
  - c) change of momentum
  - d) rate of change of mass
3. Newton's III law is applicable?
  - a) for a body is at rest
  - b) for a body in motion
  - c) both a & b
  - d) only for bodies with equal masses
4. Plotting a graph for momentum on the X-axis and time on Y-axis. slope of momentumtime graph gives?
  - a) Impulsive force
  - b) Acceleration
  - c) Force
  - d) Rate of force
5. In which of the following sport the turning of effect of force used?
  - a) swimming
  - b) tennis
  - c) cycling
  - d) hockey
6. In which of the following sport the turning of effect of force used?
  - a) swimming
  - b) tennis
  - c) cycling
  - d) hockey
7. The mass of a body is measured on planet Earth as M kg. When it is taken to planet of radius half that of the Earth then its value will be \_\_\_\_\_ kg?
  - a) 4 M
  - b) 2 M
  - c) M/4
  - d) M
8. If the Earth shrinks to 50% of its real radius its mass remaining the same, the weight of a body on the Earth will?
  - a) decrease by 50%
  - b) increase by 50%
  - c) decrease by 25%
  - d) increase by 300%
9. To project the rockets which of the following principle(s) is / (are) required?
  - a) Newton's third law of motion
  - b) Newton's law of gravitation
  - c) law of conservation of linear momentum
  - d) both a and c
10. Physics that deals with the effect of force on bodies is
  - a) Kinematics
  - b) Dynamics
  - c) Statics
  - d) Mechanics
11. \_\_\_\_\_ deals with the bodies which are at rest under the action of forces.
  - a) Statics
  - b) Kinematics
  - c) Dynamics
  - d) Mechanics
12. Study of moving bodies under the action of forces \_\_\_\_\_.
  - a) Statics
  - b) Kinematics
  - c) Dynamics
  - d) Mechanics
13. The resistance of a body to change its state of rest is called
  - a) inertia of rest
  - b) inertia of motion
  - c) momentum
  - d) inertia of direction
14. The resistance of a body to change its state of motion is called
  - a) force
  - b) momentum
  - c) inertia of motion
  - d) inertia of direction
15. The resistance of a body to change its direction of motion is
  - a) force
  - b) momentum
  - c) inertia of motion
  - d) inertia of direction
16. Mixing sugar in a glass of milk using a spoon is \_\_\_\_\_.
  - a) force
  - b) momentum
  - c) inertia of motion
  - d) inertia of direction
17. The act of cleaning a carpet by heating it with a stick is an example for inertia of
  - a) motion
  - b) direction
  - c) rest
  - d) momentum
18. A luggage is usually tied with a rope on the roof of the buses due to
  - a) inertia of motion
  - b) inertia of direction
  - c) inertia of rest
  - d) momentum
19. The momentum of a heavy object at rest will be

- a)large      b)infinity      c)zero      d)small
- 20 . Inertia is a \_\_\_\_\_  
a)property of matter      b)type of force      c)the speed of an object      d)none of the above
- 21 . A & B are two objects with masses 100 kg & 75 kg respectively, then \_\_\_\_\_  
a) both will have same inertia      b) B will have more inertia      c) A will have more inertia      d) both will have less inertia
- 22 . The physical quantity which is the measure of inertia is \_\_\_\_\_  
a)density      b)weight      c)force      d)mass
- 23 . The sparks produced during sharpening a knife against a grinding wheel leaves the rim of the wheel tangentially. This is due to  
a)inertia of rest      b)inertia if motion      c)inertia of direction      d)force applied
- 24 . The law that gives a qualitative definition of force is \_\_\_\_\_  
a)Newton's I law      b)Newton's II law      c)Newton's III law      d)Law of gravitation
- 25 . The SI unit of force is  
a)energy      b)joule      c)newton      d)dyne
- 26 . The SI unit of force is  
a)energy      b)joule      c)newton      d)dyne
- 27 . A force is applied by direct physical contact between two bodies is  
a)Contact force      b)Non-contact force      c)Balanced force      d)Unbalanced force
- 28 . Gravitational, magnetic and electro magnetic forces are example for \_\_\_\_\_  
a)Contact      b)Non - contact      c)Balanced      d)Unbalanced
- 29 . Opening a door is an example of \_\_\_\_\_  
a)a non contact force      b)contact force      c)balanced      d)unbalanced
- 30 . A body is said to be under balanced force when the resultant force applied on that body is  
a)zero      b)infinite      c)ore      d)none
- 31 . \_\_\_\_\_ is an example for non - contact force.  
a)magnetic      b)frictional      c)rolling ball      d)none
- 32 . If two equal forces acting along opposite direction is parallel to each other then they are called as  
a)resultant      b)equilibrant      c)like      d)unlike
- 33 . The rotating or turning effect of a force is  
a)momentum      b)torque      c)couple      d)none
- 34 . Acceleration of an object will increase as the net forces increase depending on its  
a)volume      b)mass      c)shape      d)density
- 35 . The formula used for Newton's II law of motion  
a) Force = mass X acceleration      b) Velocity = acceleration X time      c) Momentum = mass X velocity      d) Speed = distance / time
- 36 . An ice skater pushes harder with his leg muscles, he begins to move faster. This is an example of  
a)Newton's I law      b)Newton's II law      c)Newton's III law      d)Law of conservation
- 37 . You're riding a bike when suddenly you hit a large rock. The bike stops moving but you fly over the handle - bars. This is an example of \_\_\_\_\_  
a)Newton's I law      b)Newton's II law      c)Newton's III law      d)Law of conservation
- 38 . When you paddle a canoe, the canoe goes forward. This is an example of \_\_\_\_\_  
a)Newton's I law      b)Newton's II law      c)Newton's III law      d)Law of conservation
- 39 . The acceleration in a body is due to  
a)balanced force      b)unbalanced force      c)equilibrant      d)couple
- 40 . When an object undergoes acceleration  
a) its speed always increase      b) a force always acts an it      c) its velocity always increases      d) velocity always decreases
- 41 . The physical quantity which is equal to rate of change of momentum is  
a)displacement      b)acceleration      c)force      d)impulse
- 42 . The physical quantity which is equal to change in momentum is  
a)velocity      b)acceleration      c)force      d)impulse
- 43 . An example for a vector quantity is  
a)speed      b)distance      c)momentum      d)length
- 44 . The gravitational force of earth acting on a body of mass 1 kg is \_\_\_\_\_  
a)8.9 N      b)9.8 N      c)980 N      d)1 N
- 45 . The resultant of action & reaction forces is \_\_\_\_\_  
a)greater than zero      b)less than zero      c)zero      d)ore
- 46 . Rocket works on the principle of conservation of

- a)mass      b)energy      c)momentum      d)velocity
- 47 . Which of the following statement is not correct for an object moving along a straight path in an accelerated motion?
- a) its speed keeps changing      b) its velocity always changes      c) it always goes away from the earth      d) A force is always acting on it
- 48 . According to the Newton's III law of motion, action & reaction
- a) always act on the same body      b) have same magnitude & direction      c) always act in opposite directions      d) act on either body at normal to each other
- 49 . A water tanker filled up to 2/3 of its height is moving with a uniform speed, on sudden application of the brake, the water in the tank would
- a) move backward      b) be unaffected      c) rise upwards      d) move forward
- 50 . The value of g increases as we go
- a) above the earth's surface      b) decreases as we go to the centre of the earth      c) remains constant      d) is more at equator and less at poles
- 51 . The ball is thrown up, the value of g will be
- a) zero      b) +ve      c) -ve      d) negligible
- 52 . The distance between two bodies becomes 6 times more than the usual distance, then force becomes
- a) 36 times      b) 6 times      c) 12 times      d) 1/36 times
- 53 . The gravitational force between two objects becomes \_\_\_\_ when the masses of both objects are halved without altering the distance between them
- a) f/4      b) f/2      c) f      d) 2f
- 54 . Newton's law of gravitation applies to
- a) small bodies only      b) plants only      c) all bodies irrespective of their size      d) for solar system
- 55 . A thief stole a box with valuable article of weight 'w' and jumped down a wall of height 'h'. Before he reached the ground he had experienced a load of
- a) w/2      b) zero      c) w      d) 2w
- 56 . If the radius of the earth were to shrink by one percent its mass remaining the same, the acceleration due to gravity on the earth's surface would
- a) decrease unchanged      b) remains      c) increase      d) none of these
- 57 . The force of gravitation between two bodies in the universe does not depend on
- a) the distance between them      b) the product of their masses      c) the sum of their masses      d) the gravitational constituent
- 58 . The magnitude of the weight is expressed in the units of
- a) displacement      b) mass (kg)      c) force (Newton)      d) none
- 59 . The weight of an object in a satellite orbiting around the earth is
- a) zero      b) actual weight      c) less than the actual weight      d) greater than the actual weight
- 60 . The motion of falling bodies towards earth is due to
- a) gravitational rotation      b) weightless mass      c) acceleration due to gravity      d) gravitational force
- 61 . Which quantity is zero at the centre of the earth?
- a) mass      b) weight      c) both mass & weight      d) none
- 62 . The acceleration due to gravity varies on earth with
- a) distance      b) height      c) mass of an object      d) all the above
- 63 . If lift is accelerated in the upward direction, then the apparent weight of a body is
- a) more than true weight      b) equal to the true weight      c) less than true weight      d) not equal to the true weight
- 64 . Cutting tools have sharp edges to
- a) increase area of contact      b) decrease pressure      c) decreases area and increase pressure      d) increase area & increase pressure
- 65 . What would happen, if the force of gravity disappears suddenly on earth?
- a) All objects would move in a rapid whirl wing      b) All object will float      c) not possible      d) cannot say
- 66 . The unit of 'g' is  $\text{m s}^{-2}$ . It can be also expressed as\*
- a)  $\text{cm s}^{-2}$       b)  $\text{N kg}^{-1}$       c)  $\text{N m}^{-2} \text{kg}^{-1}$       d)  $\text{cm}^2 \text{s}^{-2}$
- 67 . One kilogram force equals to\*

a) 9.8 dyne

b)  $(9.8 \times 10^4) \text{ N}$ c)  $(98 \times 10^4) \text{ dyne}$ 

d) 980 dyne

PART - II

42 x 2 = 84

**ANSWER ALL QUESTIONS**

68. Define inertia. Give its classification?\*
69. Classify the types of force based on their application?\*
70. If a 5N and a 15N forces are acting opposite to one another. Find the resultant force and the direction of action of the resultant force?\*
71. Define moment of a couple?\*
72. State the principle of moments?\*
73. State Newton's second law?\*
74. Why a spanner with a long handle is preferred to tighten screws in heavy vehicles?\*
75. While catching a cricket ball the fielder lowers his hands backwards. Why?\*
76. How does an astronaut float in a space shuttle?\*
77. Bodies of larger mass need greater effort to put them in motion. Why?
78. A constant force F acts on a truck over a distance s and for a time t. what is the momentum gained by the truck?
79. If a moving car collides head on with a moving car in the opposite direction. What does the conservation of momentum state?
80. If a force is acting on a moving body perpendicular to the direction of motion, then what will be its effect on the speed of the body?
81. If the net force acting on a body be zero, then will the body remain necessarily in rest position?
82. The distance travelled by a moving body is directly proportional to time. Is any external force acting on it?
83. A lift is accelerated upward. What is apparent weight of person inside the lift?
84. When will be the force exerted by the floor of an elevator on the foot of a person standing there is more than the weight of the person?
85. When a ball of 0.5kg mass moving with a speed of 20 ms<sup>-1</sup> rebounds after striking normally a perfectly elastic wall. Find the change in momentum.
86. Thief jumps from roof of a house with a box of weight W on his head. What will be the weight of the box as experienced by the thief during jump?
87. Action and reaction forces do not balance each other. Why?
88. Why does a gun recoil when a bullet is fired?
89. A brinjal vendor sells his brinjal using a beam balance in an elevator. Will he gain more if the elevator is accelerating up?
90. Which law is used in geotropism?
91. A boy puts a heavy box of mass M on his head and jumps down from the top of a multistoried building to the ground. How much is the force exerted by the box on his head during his free fall? Does the force of gravity increase during the fall?
92. Define inertia. Give its classification.
93. Classify the types of force based on their application.
94. If a 5N and a 15N forces are acting opposite to one another. Find the resultant force and the direction of action of the resultant force.
95. Define moment of a couple.
96. State the principle of moments.
97. State Newton's second law.
98. Why a spanner with a long handle is preferred to tighten screws in heavy vehicles?
99. While catching a cricket ball the fielder lowers his hands backwards. Why?
100. How does an astronaut float in a space shuttle?
101. When is a body said to be in rest and motion?
102. What is the use of Steering Wheel?
103. What is Gravitational unit of force?
104. What is Impulsive force?
105. What is meant by Apparent weight?
106. What is meant by Weightlessness?
107. Define 1N?
108. Define 1 dyne?
109. Weight of a person inside the lift while at rest is 50 N. what is the weight he feels when lift moves up with an acceleration of  $9.8 \text{ ms}^{-2}$ ?

**ANSWER ALL QUESTION**

- 110 . Give more examples for the cases in which the time of action of force is made large to have less force?
- 111 . Give examples for the cases in which the time of action of force is very short to have a large force?
- 112 . What is meant by Apparent weight?
- 113 . What is meant by Weightlessness?
- 114 . What is mechanics and what it deals?
- 115 . What is Dynamics? Write its branches based on the study of moving objects under the action of forces?
- 116 . What is Linear momentum?
- 117 . Classify the following things into like parallel and unlike parallel forces (Dragging water from well, force applied to crow bar, weight balance, turning pen cap)
- 118 . If 25N of force is used to compress a spring, then how much reactive force exerted by spring?
- 119 . Is it possible to open a cap of pen with one hand? If not give reason.
- 120 . What happens to the weight of a person while he goes from polar region to equator?
- 121 . What are the concepts prepared by Galileo?
- 122 . Give the application of torque.
- 123 . Give examples for Newton's third law.