1. Acceleration can be defined as the change in velocity per unit _____. C

a) Displacement b) Distance
c) Time d) Area

2. The limit $\Delta t \to 0$ $\frac{\overrightarrow{\Delta V}}{\Delta t}$ is called as: A

a) Instantaneous acceleration b) Instantaneous velocity
c) Average velocity d) Final velocity

3. If the velocity of a body is decreasing, the acceleration is: B

a) Positive b) Negative
c) Zero d) None of the above

4. The acceleration due to gravity is denoted by: B

a) G b) g
c) a d) h

5. The average acceleration of a body during time is given by: B

a) $\frac{\overrightarrow{\Delta S}}{\Delta t}$ b) $\frac{\overrightarrow{\Delta V}}{\Delta t}$
c) $\frac{\Delta t}{\overrightarrow{\Delta V}}$ d) $V^{\Delta t}$

6. The average acceleration of a body becomes its instantaneous acceleration when: A

a) Time interval, Δt tends to zero b) ΔS tends to zero
c) ΔV tends to zero d) $\frac{\overrightarrow{\Delta V}}{\Delta t}$ tends to zero

7. The average acceleration during any interval of time is equal to the instantaneous acceleration when the body is moving with: B

a) Uniform velocity b) Uniform acceleration
c) Constant speed d) Negative acceleration

8. "A body continues its state of rest or uniform motion unless acted upon by an unbalanced force". This is the: D

a) Law of gravitation b) Third law of motion
c) Second law of motion d) First law of motion

9. The property of a body that opposes any change in its state of rest or motion is called its: A

a) Inertia b) Mass
c) Force d) Energy

10. Mass is the quantity of _____ in a body. D

a) Energy b) Inertia
c) Weight d) Matter

11. The agent that causes a change in the state of rest or motion of a body is known as: C

a) Torque b) Moment of inertia
c) Force d) Energy

12. A moving car whose engine is switched off, comes to rest after some time due to: C

a) Inertia b) Its Mass
c) Friction d) Earth's gravitation

13. According to the second law of motion, acceleration is proportional to: A

a) Force b) Time
c) Mass d) Distance

14. The mathematical form of Newton's second law of motion is: D

a) $m = \frac{a}{F}$ b) $m = Fa$

c) $F = \frac{m}{a}$ d) $F = ma$

B

15. One Newton is a force that produces an acceleration of $\frac{1}{2}$ m/s^2 in a body of mass:

a) 1 kg b) 2 kg

c) 4 kg d) 8 kg

16. An inertial frame of reference is one whose: A

a) Acceleration is zero b) Velocity is changing with time

c) Acceleration is uniform d) Inertia is not zero

17. According to the third law of motion, every action causes a reaction which is _____ to it. A

a) Opposite and equal b) In the same direction and equal

c) Opposite but double in magnitude d) In any direction but equal

18. Two bodies of masses m_1 and m_2 are hanging vertically over a pulley. Their acceleration is given by the formula: A

a) $a = \left(\frac{m_1 + m_2}{m_1 - m_2}\right) g$ b) $a = \left(\frac{m_1 - m_2}{m_1 + m_2}\right) g$

c) $a = \left(\frac{2m_1 m_2}{m_1 + m_2}\right) g$ d) $\frac{m_2 g}{m_1 + m_2}$

19. The tension in the rope over a pulley with masses m_1 and m_2 hanging on its ends is given by: B

a) $T = \frac{2m_1 m_2}{m_1 + m_2} g$ b) $T = \frac{m_1 - m_2}{m_1 + m_2} g$

c) $T = \frac{m_1 + m_2}{m_1 - m_2} g$ d) $T = \frac{m_1}{m_1 + m_2} g$

20. When a body of mass m_1 lying on a frictionless horizontal surface is connected with another mass m_2 hanging freely over a pulley, the acceleration produced in the masses will be: A

a) $a = \frac{m_1 m_2}{m_1 + m_2} g$ b) $T = \frac{m_1}{m_1 + m_2} g$

c) $T = \frac{m_2}{m_1 + m_2} g$ d) $T = \frac{m_1}{m_1 - m_2} g$

21. The tension in case of a mass m_1 lying on a horizontal surface and a mass m_2 hanging over a pulley is given by: C

a) $T = \frac{m_1 - m_2}{m_1 + m_2} g$ b) $T = \frac{m_1 m_2}{m_1 + m_2} g$

c) $T = \frac{m_1 + m_2}{m_1 - m_2} g$ d) $T = \frac{m_1}{m_1 - m_2} g$

22. Two masses m_1 and m_2 are placed on a frictionless surface in contact with each other. The acceleration produced in them by a force $\vec{F}$ is given by: B

a) $\vec{a} = \vec{F}\ (m_1 + m_2)$ b) $\vec{a} = \vec{F}\ (m_1 - m_2)$

c) $\vec{a} = \vec{F}\ m_1 m_2$ d) $\vec{a} = \frac{\vec{F}}{m_1 + m_2}$

23. Linear momentum of a body is the product of its: B

a) Mass and acceleration b) Mass and velocity

c) Force and mass d) Energy and time

24. The impulse of a force is the product of: A

a) Force and time b) Force and velocity

c) Force and mass d) Energy and mass

25. Force can also be defined as the rate of change of: C

a) Energy b) Velocity

c) Momentum d) Inertia

26. The total linear momentum of a system remains constant if: A

a) No external force is acting upon it b) It has no energy

c) It is freely falling under gravity d) No frictional force is present

27. Two bodies of masses m_1 and m_2 connected by a compressed spring are at rest. When the spring is released the relation between velocities of both masses will be given by: A

a) $\vec{V_1} = \frac{m_2}{m_1}\vec{V_2}$ b) $\vec{V_1} = \frac{m_1}{m_2}\vec{V_2}$

c) $\vec{V_1} = -\frac{m_2}{m_1}\vec{V_2}$ d) $\vec{V_1} = -\vec{V_2}$

28. Elastic collision is that collision during which: A

a) Momentum is conserved b) Energy is conserved

c) Mass is conserved d) Angular momentum is conserved

29. Impulse can be defined as the change in _____ of a body by an impulsive force. B

a) Velocity b) Momentum

c) Energy d) Acceleration

30. When a number of bodies are such that they can exert force upon one another and no external agency exerts a force on them, they are said to form: A

a) An isolated system b) An inertial frame of reference

c) Non-inertial frame of reference d) None of the above

31. Two elastic balls collide with each other. The relationship between their velocities before collision, V_1 & V_2 and after collision , V_1' & V_2', is given by: D

a) $V_1 + V_2 = V_1' + V_2'$ b) $V_1 - V_2 = V_1' - V_2'$

c) $V_1 - V_1' = V_2 - V_2'$ d) $V_1 - V_2 = V_2' - V_1'$

32. If two bodies of equal mass collide elastically then: D

a) Their velocities are added to each other b) Their velocities are subtracted

c) Their velocities do not change d) They exchange their velocities

33. When a ball of mass m_1 moving with velocity V_1 collides elastically with another ball with mass m_2 and velocity $V_2 = 0$, its velocity after collision V_1' will be: A

a) $V_1' = \frac{m_1 - m_2}{m_1 + m_2} V_1$ b) $V_1' = \frac{m_1 + m_2}{m_1 - m_2} V_1$

c) $V_1' = \frac{2m_1 m_2}{m_1 + m_2} V_1$ d) $V_1' = \frac{m_1}{m_1 + m_2} V_1$

34. When a ball of mass m_1 moving with velocity V_1 collides with another ball with mass m_2 and velocity $V_2=0$, the velocity (V_2') of m_2 after collision will be: C

a) $V_2' = \frac{m_1}{m_1 + m_2} V_1$ b) $V_2' = \frac{2m_1}{m_1 + m_2} V_1$

c) $V_2' = \frac{2m_1}{m_1 + m_2} V_1$ d) $V_2' = \frac{2m_2}{m_1 + m_2} V_1$

35. When a body of mass m moving with velocity V collides elastically with another body of the same mass and at rest then after the collision: D

a) Both of them come to rest b) Both move with the same velocity V

c) Both move with velocity $\frac{V}{2}$ d) The first body comes to rest while the other moves with velocity V

36. If a body whose mass is much less than a body at rest collides with it elastically, then it bounces back with: A

a) Same velocity b) Double velocity
c) Half of the velocity d) No velocity

37. When the mass of the colliding body is much larger than the mass of the body at rest, its velocity after collision: A

a) Becomes double b) Becomes half
c) Becomes zero d) Remains the same

38. If the mass of a body, moving with velocity V, is much larger than the body with which it collides elastically, the velocity of the other body after collision becomes: B

a) V b) 2V
c) 3V d) 4V

39. The force which resists motion of a body is called: A

a) Force of friction b) Fictitious force
c) Reacting force d) None of the above

40. The force of static friction is always _____ the applied force. B

a) Equal and in the same direction to b) Equal and opposite to
c) Less than d) More than

41. The force of maximum static friction is _____ the force of sliding friction. B

a) Slightly less than b) Slightly more than
c) Equal to d) Half of

42. Force of kinetic friction is proportional to the: B

a) Applied force b) Normal reaction
c) Area of contact d) Velocity

43. When a block placed on a horizontal rough surface is about to slip under the action of an applied force, the value of static friction is given by: D

a) $F_{smax} = \mu_k F_n$ b) $F_{smax} = \mu_s F_K$
c) $F_{smax} = \mu_k F_K$ d) $F_{smax} = \mu_s F_n$

44. Force of kinetic friction given by: A

a) $F_k = \mu_k F_n$ b) $F_k = \mu_s F_n$
c) $F_k = \mu_s F_s$ d) $F_k = \mu_k F_s$

45. According to Stoke's law the force of friction acting on a spherical ball of radius r moving with velocity V in a fluid of viscosity η is given by: A

a) $F_D = 6\pi\eta rV$ b) $F_D = 4\pi\eta r^2V$
c) $F_D = 2\pi\eta rV$ d) $F_D = 6\pi\eta rV^2$

46. Terminal velocity is the velocity of a body moving in a fluid which attains a maximum value due to: B

a) Gravity b) Fluid friction
c) Surface friction d) Applied force

47. Hovercraft move on the surface of land and water on a cushion of: A

a) Air b) Water
c) Cotton d) Foam

48. The force acting on a body of mass m is placed on an inclined plane making an angle θ with the horizontal is: A

a) $mg \sin\theta$ b) $mg \cos\theta$
c) $mg \tan\theta$ d) mg

49. If a body changes its position with respect to its surroundings then it is said to be in state of _____. A

a) Motion b) Rest

c) Displacement d) Velocity

50. If a body does not change its position with respect to its surroundings then it is said to be in state of _____. B

a) Motion b) Rest
c) Displacement d) None of these

51. The shortest distance between two points in known as _____. C

a) Motion b) Rest
c) Displacement d) None of these

52. Displacement is a _____ quantity. A

a) Vector b) Scalar
c) Positive d) None of these

53. The total distance covered per unit time is called _____. C

a) Vector b) Velocity
c) Speed d) Distance

54. The formula for speed is represented as _____. A

a) $v = \frac{S}{t}$ b) $\vec{v} = \frac{\vec{S}}{t}$
c) $v = \frac{\Delta S}{\Delta v}$ d) None of these

55. The S.I. unit OF speed is _____. C

a) m/s^2 b) km/h
c) m/s d) N

56. The distance covered by a body in unit time in specified direction is called _____. B

a) Speed b) Velocity
c) Uniform velocity d) None of these

57. The formula for velocity is _____. A

a) $\vec{v} = \frac{\vec{S}}{t}$ b) $v = \frac{S}{t}$
c) $\vec{v} = \frac{\Delta S}{\Delta v}$ d) None of these

58. Velocity is a _____ quantity. B

a) Scalar b) Vector
c) Positive d) Negative

59. The dimension for velocity is _____. A

a) $[L.T^{-1}]$ b) $[L.T^{-2}]$
c) $[L.T^{-3}]$ d) $[L.T^{-4}]$

60. If a body covers unequal displacement in equal intervals of time or equal displacement in unequal intervals of time, then it is said to be moving with _____. B

a) Constant velocity b) Variable velocity
c) Average velocity d) None of these

61. The formula for average velocity is _____. A

a) $V_{av} = \frac{\overrightarrow{\Delta S}}{\Delta t}$ b) $V_{av} = \frac{\overrightarrow{\Delta S}}{\overrightarrow{\Delta V}}$
c) $V_{av} = \frac{\overrightarrow{\Delta S}}{\overrightarrow{\Delta a}}$ d) None of these

62. The instantaneous velocity is calculated by the formula _____. D

a) $V_{av} = \lim_{\Delta t \to 1} \frac{\overrightarrow{\Delta S}}{\Delta t}$ b) $V_{av} = \lim_{\Delta t \to 0} \frac{\overrightarrow{\Delta S}}{\Delta t}$

c) $V_{av} = \lim_{\Delta t \to 10} \frac{\Delta S}{\Delta t}$ d) None of these

63. The rate of change of velocity is called _____. C

a) Uniform velocity b) Velocity

c) Acceleration d) None of these

64. The formula for acceleration is _____. A

a) $\vec{a} = \frac{\overrightarrow{\Delta V}}{\Delta t}$ b) $\vec{V} = \frac{\overrightarrow{\Delta a}}{\Delta t}$

c) $\vec{a} = \frac{\overrightarrow{\Delta S}}{\Delta t}$ d) None of these

65. The acceleration is a _____ quantity. C

a) Positive b) Magnitude

c) Vector d) Scalar

66. The rate of decrease of velocity is called _____. A

a) Retardation b) Acceleration

c) Variable Acceleration d) None of these

67. The formula for instantaneous acceleration is _____. B

a) $\vec{a}_{inst} = \lim_{\Delta t \to 1} \frac{\overrightarrow{\Delta V}}{\Delta t}$ b) $\vec{a}_{inst} = \lim_{\Delta t \to 0} \frac{\overrightarrow{\Delta V}}{\Delta t}$

c) $\vec{a}_{inst} = \lim_{\Delta t \to 10} \frac{\overrightarrow{\Delta V}}{\Delta t}$ d) None of these

68. There are _____ laws of motion. D

a) Four b) Five

c) Six d) Three

69. According to first law of motion, "A body continues its state of rest or uniform motion in a straight line unless it is compelled by _____ impressed upon it". A

a) An unbalanced force b) Equal force

c) With right acceleration d) None of these

70. The property of a body that opposes any change in its state of motion or rest, is called _____. B

a) Second law of motion b) Law of inertia

c) Third law of motion d) None of these

71. Newton's first law of motion is also called _____. A

a) Law of inertia b) Second law of motion

c) Third law of motion d) None of these

72. Newton's first law of motion gives us the idea of _____. A

a) Law of inertia b) Force

c) Third law of motion d) None of these

73. Second law of motion is also known as _____. A

a) Law of acceleration b) Law of inertia

c) Law of motion d) None of these

74. According to second law of motion "when a force is applied on a body, the acceleration is produced in the direction of the force which is directly proportional to the magnitude of the applied force and _____ to the mass of the body". B

a) Also directly proportional b) Inversely proportional

c) Same direction d) Apposite direction

75. The equation of second law of motion is _____. D

a) F = Ka b) F = Ga

c) $F = \frac{mv^2}{r}$ d) F = ma

76. If the mass of the body is 20 g and it produces an acceleration of 4 m/s^2, then find the value of force? D

a) F = 80.04 N b) F = 0.8 N
c) F = 8 N d) F = 0.08 N

77. If a force of 50 N is applied on a body whose mass is 5 kg find the amount of an acceleration? C
a) $5\ m/s^2$ b) $1\ m/s^2$
c) $10\ m/s^2$ d) $100\ m/s^2$

78. According to third law of motion, "To every action, there is always an equal but _____ reaction". D
a) Same b) Positive
c) Acceleration d) Opposite

79. In motion of connected bodies, when both the bodies are hanging vertically over a pulley, then the values of tension T is _____. B
a) $T = \frac{4m_1m_2}{m_1+m_2}g$ b) $T = \frac{2m_1m_2}{m_1+m_2}g$
c) $T = \frac{3m_1m_2}{m_1+m_2}g$ d) $T = \frac{6m_1m_2}{m_1+m_2}g$

80. _____ is defined as the product of the mass of the object and velocity $\vec{v}$. B
a) Acceleration b) Momentum
c) Average velocity d) Gravitational force

81. We can write the formula of the momentum _____. A
a) $\vec{p} = m\vec{v}$ b) F = ma
c) $\vec{p} = m\vec{a}$ d) $\vec{p} = r\vec{a}$

82. The S.I unit of momentum is _____. B
a) kg / s^2 b) Kg m/s
c) kg / s d) None of these

83. The dimension for momentum is A
a) $[MLT^{-1}]$ b) $[MLT^{-2}]$
c) $[ML^{-1}T]$ d) $[ML^{-2}T]$

84. The _____ force is a force which acts on a body for very short time. A
a) Impulsive b) Negative
c) Magnitude d) Momentum

85. The unit of impulse is _____. D
a) N/s b) N/s^2
c) Ns^2 d) None of these

86. The dimension of impulse is _____. A
a) $[MLT^{-1}]$ b) $[MLT^{-2}]$
c) $[MLT^{-3}]$ d) None of these

87. According to law of conservation of momentum, "The total momentum of the system before collision is _____ to the total momentum of system after collision. C
a) Greater b) Less
c) Equal d) None of these

88. Ii elastic collision both energy and _____ remain constant before and after collision. A
a) Momentum b) Force
c) Acceleration d) Velocity

89. The force which apposes the motion of the body is known as _____. C
a) Momentum b) Resistive force
c) Friction d) None of these

90. The two main types of friction are static friction and _____. A
a) Dynamic friction b) Close friction
c) Relative friction d) None of these

91. The law expresses the drag F_d on a sphere of radius "r" moving with velocity "v" as D

_____.

a) $F_d = 5\ \pi\ \eta / rv$ b) $F_d = 6\ \pi\ \eta / rv$

c) $F_d = 7\ \pi\ \eta / rv$ d) None of these

92. In inclined plane, the acceleration of the body is _____. A

a) $a = g \sin\theta$ b) $a = -g \sin\theta$

c) $a = g \cos\theta$ d) $a = -g \cos\theta$

93. Force of _____ is proportional to the normal reaction. B

a) Velocity b) Kinetic friction

c) Acceleration d) None of these

94. The distance traveled by a body in one second is called. A

a) Speed b) Velocity

c) Average velocity d) Acceleration

95. The rate of change of displacement is defined as B

a) Speed b) Velocity

c) Acceleration d) Retardation

96. If the values of instantaneous and average velocities are equal, the body is said to be moving with D

a) Uniform acceleration b) Uniform speed

c) Variable velocity d) Uniform velocity

97. Acceleration of bodies of different masses allowed to fall freely is C

a) Different for different heights b) Different for different bodies

c) The same d) Variable

98. An acceleration of 1 m/s^2 is produced in a body of mass 1 kg by a force of B

a) One pound b) One Newton

c) One dyne d) One slug

99. If a body is moving with constant velocity, then C

a) Its direction may be changing b) Its acceleration is variable

c) Its acceleration is zero d) None of the above

100. If a body is moving along a circle with constant speed, then B

a) Its velocity is uniform b) Its velocity is changing

c) Its acceleration is zero d) Its acceleration is increasing

101. If a body is moving with constant speed in a circle, then its acceleration is directed A

a) Towards the centre b) Away from the centre

c) Tangent to the circle d) None of the above

102. Laws of motion are valid in a frame of reference which is A

a) Inertial b) Non-inertial

c) At rest d) None of the above

103. Laws of motion not valid in a system which is C

a) At rest b) Inertial

c) Non-inertial d) Moving with uniform velocity

104. The laws of motion give the relation between B

a) Mass and velocity b) Force and acceleration

c) Velocity and acceleration d) Mass and weight

105. If the slope of the velocity-time graph increases at constant rate, with time, then the body is said to have D

a) Uniform retardation b) Uniform negative acceleration

c) Average acceleration d) Uniform positive acceleration

106. Newton's second law of motion is also called B

a) Law of inertia b) Law of acceleration

c) Law of gravitation d) Law of thermodynamics

107. The force acting on a body of mass 10 kg falling under gravity is A

a) 98 N b) 9.8 N

c) 0 N d) 49 N

108. A body of mass 5 kg starts from rest and falls freely. The distance covered by it in one second is D

a) 9.8 m b) 980 m

c) 49 m d) 4.9 m

109. A body is moving in a circle at a constant speed. Which of the following statements is true? D

a) There is no acceleration b) There is no force acting on it

c) There is a force acting at a tangent to the circle

d) There is a force acting towards the centre of the circle

110. When a force is applied to a body, several effects are possible. Which of the following effects could not occur? C

a) The body rotates b) The body speeds up

c) The mass of the body decreases d) The body changes direction

111. What must be changing when a body is accelerating uniformly? B

a) The force acting on the body b) The velocity of the body

c) The mass of the body d) The speed of the body

112. A stone is dropped from a cliff. The time during which it covers a distance of 490 m is A

a) 10 sec b) 100 sec

c) 9.8 sec d) 4.9 sec

113. The braking force needed to bring a car of mass 1200 kg to rest in 5 seconds when it is moving at 20 m/s is B

a) 6000 N b) 4800 N

c) 2400 N d) 1200 N

114. In equation F = ma, the mass m is C

a) Rest mass b) Variable mass

c) Inertial mass d) Gravitational mass

115. The quantitative measure of inertia of a body is A

a) Its mass b) Its weight

c) Its velocity d) Force

116. When a horse pulls a cart, the force that causes the horse to move forward is the force D

a) The cart exerts on horse b) The horse exerts on cart

c) The horse exerts on the ground d) The ground exerts on horse

117. When a person jups off the ground, the reaction force of the ground is A

a) Greater than the weight of the person b) Smaller than the weight of the person

c) Equal to the weight of the person d) Zero

118. The property of body that opposes any change in its state of motion or rest is D

a) Weight b) Torque

c) Momentum d) Inertia

119. Motion of rocket in space is the example of C

a) First law of motion b) Second law of motion

c) Third law of motion d) Law of gravitation

120. Rate of change of momentum is B

a) Weight b) Force

c) Mass d) Acceleration

121. When a bullet is fired by a gun, the gun recoils backward with a velocity A

a) Less than that of the bullet b) Equal to that of the bullet

c) Greater than that of the bullet d) None of the above

122. In elastic collision between two bodies B

a) Energy is conserved but momentum is not

b) Both momentum and energy are conserved

c) Momentum is conserved but energy is not

d) Both momentum and energy are not conserved

123. Newton's third law of motion states that A

a) When two bodies interact, action and reaction are equal and opposite

b) Acton and reaction produce the same acceleration in two bodies

c) Inertia and mass are the same d) Inertia and force are the same

124. Inertia of a body is measured in terms of B

a) Its velocity b) Its mass

c) Its weight d) The applied force

125. The attraction of earth on a body is called D

a) Mass b) Inertial
c) Acceleration d) Weight

126. A ball is hit so that it moves straight up in the air and reaches the maximum height in 2 seconds. Its initial velocity is A
a) 19.6 m/s b) 39.2 m/s
c) 9.8 m/s d) 4.9 m/s

127. Which of the following is true D
a) F = m/a b) a = m/F
c) m = a/F d) a = F/m

128. Earth is taken to be a B
a) Non-inertial frame b) Inertial frame
c) Reference axes d) None of the above

129. Which law is applicable in the motion of the rocket in space D
a) Conservation of mass b) Conservation of energy
c) Conservation of angular momentum d) Conservation of linear momentum

130. In the absence of any force acting on a body B
a) Its momentum changes with distance b) Its momentum is conserved
c) Its momentum is not conserved d) Its momentum changes with time

131. A force which always opposes the motion of a body called C
a) Static force b) Gravitational force
c) Frictional force d) Impulsive force

132. Stoke's law is applicable to C
a) Motion through horizontal surface b) Motion through free space
c) Motion through viscous medium d) Motion through non-resistive medium

133. A fog droplet falls vertically with an acceleration while touching ground B
a) Equal to g b) Less than g
c) Greater than g d) Equal to zero

134. The terminal velocity of a body falling vertically through a fluid A
a) Increases with increase in mass b) Decreases with increase in mass
c) Remains same with increase in mass d) None of the above

135. The terminal velocity in case of spherical droplet is A
a) Inversely proportional to the radius of the droplet
b) Directly proportional to the radius of the droplet
c) Inversely proportional to the square of the radius of the droplet
d) Inversely proportional to the cube of the radius of the droplet

136. Neglecting friction, the motion of a body on an inclined plane is independent of the D
a) Area of the body b) Volume of the body
c) Density of the body d) Mass of the body

137. The acceleration of a spherical ball on a smooth inclined plane is maximum when the angle of inclination to the horizontal is A
a) 90° b) 60°
c) 30° d) 0°

138. A constant mass undergoes finite uniform acceleration when the resultant force acting on it C
a) Is proportional to the velocity b) Is zero
c) Is constant but not zero d) Increases uniformly with respect to time

139. Newton's third law concerns the forces of interaction between two bodies. Which of the following statements relating to the third law is not correct? D
a) The two forces must act on two different bodies
b) The two forces are always opposite in direction
c) The two forces are at all times equal is magnitude
d) The two forces are equal and opposite so the bodies are in equilibrium

140. When a force of 4N acts on a mass of 2 kg for a time of 2s, what is the rate of change of momentum? D
a) 1 kg m s^{-2} b) 2 kg m s^{-2}
c) 4 kg m s^{-2} d) 8 kg m s^{-2}

141. A force of 20 N acts on a body of mass 100 g. The acceleration produced in the body is B

a) 20 m s^{-2} b) 2 m s^{-2}
c) 2000 m s^{-2} d) 200 m s^{-2}

142. A stone dropped from the top of a building which reaches the ground in 4 seconds. The height of the building is B
a) 4 m b) 78.4 m
c) 19.6 m d) 39.2 m

143. A car reaches a velocity of 300 km hr^{-1} after covering distance of 0.5 km. The acceleration of the car is A
a) 6.9 ms^{-2} b) 90 ms^{-2}
c) 9.6 ms^{-2} d) 3 ms^{-2}

144. A force actin gon 5 kg mass causes an acceleration of 0.2 ms^{-2} in it. The magnitude of applied force is C
a) 10 N b) 2.5 N
c) 1 N d) 0.04 N

145. An acceleration of 0.4 ms^{-2} is produced in a body when a force of 8N acts on it. The mass of the body is B
a) 3.2 kg b) 20 kg
c) 0.05 kg d) 50 kg

146. A car suffers head on collision with another car with 100 N force of impact for a short time of 2 milliseconds. The impulse is given by A
a) 0.2 NS b) 50 NS
c) 200 NS d) 0.02 NS

147. A 60 kg car is moving at a speed of 54 km hr^{-1}. Its linear momentum is B
a) 3240 Kg ms^{-1} b) 900 Kg ms^{-1}
c) 11664 Kg ms^{-1} d) 18.5 Kg ms^{-1}

148. A heavy body moving with 10 ms^{-1} collides elastically with very light body at rest. After collision, the light body moves at a velocity of C
a) Zero ms^{-1} b) 10 ms^{-1}
c) 20 ms^{-1} d) 5 ms^{-1}

149. A light particle moving with 20 ms-^{1} collides elastically with heavy body at rest. After collision, the velocity of the heavy body is A
a) Zero b) 20 ms^{-1}
c) 10 ms^{-1} d) 40 ms^{-1}

150. Acceleration in a body is always produced in the direction of B
a) Torque b) Force
c) Moment d) Velocity

151. Acceleration is defined as A
a) Rate of change of velocity b) Rate of change of speed
c) Rate of change of displacement d) Rate of change of distance

152. V_f = _____ + at D
a) 2as b) $V_i t$
c) s d) V_i

153. The quantity of matter in a body is called A
a) Mass b) Force
c) Velocity d) Momentum

154. Inertial mass and gravitational mass are C
a) Weight b) Proportional
c) Identical d) Opposite

155. The motion of a body along a straight line D
a) Vibratory motion b) Circular motion
c) Uniform motion d) Rectilinear motion

156. The slope of the velocity-time graph represents D
a) Torque b) Velocity
c) Speed d) Acceleration

157. Bodies which fall freely under gravity provide good example of motion under B
a) Variable acceleration b) Uniform acceleration

c) Uniform velocity d) None of these

158. The change in velocity per unit time is called C

a) Torque b) Velocity

c) Acceleration d) Displacement

159. If a body is moving uniformly in a straight line the force on the body is C

a) Maximum b) Minimum

c) Zero d) Average

160. Rate of change of momentum is proportional to the impressed force and takes place B

a) Opposite to the direction in which the force acts

b) In the direction in which the force acts

c) Perpendicular to the direction in which the force acts

d) In the direction at an angle of 45° to the direction of force

161. A train is running at 25 kilometers per hour, find the time taken by it to travel 15 kilometers. D

a) 20 minutes b) 25 minutes

c) 28 minutes d) 36 minutes

162. A body falling freely under the action of gravity has A

a) No weight b) Minimum weight

c) Maximum weight d) No effects on its weight

163. The law of inertia was first time formulated by D

a) Plank b) Kepler

c) Newton d) Galileo

164. Inertia of body is measured in term of B

a) Its weight b) Its mass

c) Its velocity d) Its reaction

165. Newton's second law of motion is also called C

a) Law of inertia b) Law of gravitation

c) Law of acceleration d) Law of inertial frame

166. Newton's third law states that D

a) Inertia and mass are the same

b) Action and reaction on the same body

c) Inertia and the force are the same

d) To every action there is always an equal and opposite reaction

167. The quantity of motion present in a body is called C

a) Acceleration b) Moment

c) Momentum d) Velocity

168. Inertia mass and gravitational mass are B

a) Proportional b) Identical

c) Weights d) Identical when there is no friction

169. Momentum = mass × _____ D

a) Force b) Density

c) Acceleration d) Velocity

170. In case of book lying on a table. B

a) Action of book on table and reaction of table on book are equal and opposite and are inclined to vertical.

b) Action and reaction are equal and opposite and act perpendicular to the surfaces of contact.

c) Action and reaction are equal but act in the same direction.

d) Action and reaction are not equal but are in opposite direction.

171. Swimming is possible on account of C

a) First law of motion b) Second law of motion

c) Third law of motion d) Newton's law of gravitation

172. When we jump out of a boat standing in water it moves B

a) Forward b) Backward

c) Side ways d) None of the above

173. When a train stops suddenly passengers in the running train feel an instant jerk in the forward direction because C

a) The back of seat suddenly pushes the passengers forward

b) Inertia of rest stops the train and takes the body forward
c) Upper part of the body continues to be in the state of motion whereas the lower part of the body in contact with seat remains at rest
d) Nothing can be said due to insufficient data

174. A car is moving with a uniform velocity on a rough horizontal road. Therefore, according to Newton's law of motion B
a) No force is being applied by its engine
b) A force is surely being applied by its engine
c) An acceleration is being produced in the car
d) The kinetic energy of the car is increasing

175. We can derive Newton's A
a) Second and third laws from the first law
b) First and second laws from the third law
c) Third and first laws from the second law
d) All the three laws are independent of each other

176. A jet plane lies in the air because B
a) The gravity does not act on bodies moving with high speeds
b) The thrust of the jet compensates for the force of gravity
c) The flow of air around the wings causes an upward force, which compensates for the force of gravity
d) The weight of air whose volume is equal to the volume of the plane is more than the weight of the plane

177. A man is at rest in the middle of a pond on perfectly smooth ice. He can get himself to the shore by making use of Newton's B
a) First law b) Second law
c) Third law d) All the laws

178. Inertia is that property of a body by virtue of which the body is D
a) Unable to change by itself the state of rest
b) Unable to change by itself the state of uniform motion
c) Unable to change by itself the direction of motion
d) Unable to change by itself the state of rest and of uniform linear motion

179. A cannon after firing recoils due to C
a) Conservation of energy b) Backward thrust of gases produced
c) Newton's third law of motion d) Newton's first law of motion

180. Newton's second law gives the measure of B
a) Acceleration b) Force
c) Momentum d) Angular momentum

181. A man getting down a running bus falls forward because B
a) Due to inertia of rest, road is left behind and man reaches forward
b) Due to inertia of motion upper part of body continues to be in motion in forward direction while feet come to rest as soon as they touch the road.
c) He leans forward as a matter of habit
d) Of the combined effect of all the three factors stated in a), b) and c)

182. When swims across a flowing river, maximum energy is spent in A
a) First 1/3 of the distance b) Second 1/3 of the distance
c) Last 1/3 of the distance d) Equal energy is spent throughout

183. The maximum static friction is C
a) Equal to the dynamic friction b) Always less than the dynamic friction
c) Always greater than the dynamic friction d) Sometimes greater and sometimes equal to dynamic friction

184. If the normal force is doubled, the coefficient of friction is A
a) Not changed b) Halved
c) Doubled d) Tripled

185. The maximum static frictional force is B
a) Equal to twice the area of the surface in contact
b) Independent of the area of surface in contact

c) Equal to the area of surface in contact d) None of the above

186. Which of the following statements is not true C

a) The coefficient of friction between two surfaces will increase if the surface are made rough

b) When a body slides on a surface the force of friction acts opposite to the direction of applied force

c) Rolling friction is more than sliding friction

d) The coefficient of friction between wood and wood is less than 1

187. Maximum value of static friction is called A

a) Limiting friction b) Rolling friction

c) Normal friction d) Coefficient of friction

188. The limiting friction between two bodies in contact is independent of B

a) Nature of the surfaces in contact b) The area of surfaces in contact

c) Normal reaction between the surfaces d) The materials of the bodies

189. The constant ratio which the limiting friction bears with the normal reaction is called C

a) Angle of friction b) Cone of friction

c) Coefficient of friction d) None of the above

190. Friction can be reduced by A

a) Providing lubricants b) Ball bearings

c) Roller bearings d) Any of the above

191. The frictional force which comes into play after the motion has commenced is called C

a) Static friction b) Dynamic friction

c) Limiting friction d) None of the above

192. The resistance offered to the movement on one body upon another is known as B

a) Surface tension b) Frictional resistance

c) Limiting friction d) Rolling friction

193. The coefficient of fraction depends upon A

a) Nature of surface b) Area of contact

c) Shape of the surface d) All of the above

194. Maximum static friction is always C

a) Less than the dynamic friction b) Equal to dynamic friction

c) Greater than the dynamic friction d) Has no relation with dynamic friction

195. If two bodies collide each other without the application of the external forces, the total momentum will: B

a) Continuously change b) Remain constant

c) Increase d) Decrease

196. Limiting friction bears a constant ration to the normal reaction. This ratio depends upon A

a) Nature of the material b) Shape of the surfaces

c) Area of the surfaces d) Normal reaction

197. The external unbalance force required to accelerate a body is proportional to the product of the mass of the body and the acceleration produced is called C

a) First law of motion b) Law of inertia

c) Second law of motion d) Third law of motion

198. The characteristic of weight is D

a) A vector quantity b) Not fixed property

c) Depend upon the location as well as the motion of framework

d) All of the above

199. If the velocity of a body does not increase by equal amounts in equal intervals of time it is said to have B

a) Uniform acceleration b) Variable acceleration

c) Average acceleration d) Instantaneous acceleration

200. The substances used as moderators always consist of C

a) Lighter atoms b) Heavier atoms

c) Atoms of comparable masses d) None of the above

201. The unit of linear impulse is the same as that of B

a) Force b) Momentum

c) Energy d) None of the above

202. After the collision the kinetic energy of the system is not conserved although the momentum is A

conserved, the collision is known as:

a) Inelastic b) Angular collision
c) Elastic collision d) Thermalised collision

203. A cricket ball is hit so that it travels straight up in air and acquires 3 seconds to reach the maximum height. Its initial velocity is C

a) 10 ms^{-1} b) 15 ms^{-1}
c) 29.4 ms^{-1} d) 12.2 ms^{-1}

204. Temperature changes when two balls collide. Which one of the following is conserved? D

a) Velocity b) Kinetic energy
c) Both of them d) Momentum

205. A body is thrown vertically upward with initial velocity 9.8 $msec^{-1}$. It will attain height C

a) 9.8 m b) 19.8 m
c) 4.9 m d) 29.4 m

207. The distance covered by a body in a unit time is called D

a) Velocity b) Retardation
c) Acceleration d) Speed

208. The unit of velocity in SI unit is B

a) Kilometer per minute b) Meter per second
c) Centimeter per second d) Kilometer per second

209. The change in velocity per unit time is called C

a) Speed b) Uniform velocity
c) Acceleration d) Retardation

210. The unit of acceleration in SI unit is C

a) km-s^2 b) cm s^{-2}
c) m s^{-2} d) m s^2

211. When the values of average and instantaneous acceleration are equal the body is said to be moving with B

a) Average acceleration b) Uniform acceleration
c) Positive acceleration d) None of the above

212. The laws of motion show the relation between D

a) Mass and weight b) Mass and velocity
c) Mass and acceleration d) Force and acceleration

213. The dimensions of weight are given by C

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

214. The dimensions of force are A

a) M LT^{-2} b) M^2LT^{-2}
c) N-T^{-2} d) ML^2T

215. The acceleration of a body moving with uniform velocity is A

a) Zero b) Not zero
c) Not uniform d) Variable

216. The unit of force or weight in SI unit is C

a) Dyne (dn) b) Kilogram (kg)
c) Newton (N) d) Centimeter

217. Mark the correct relation D

a) $a = \frac{V_f - V_i}{t}$ b) $a = \frac{V^2{}_f - V^2{}_i}{2s}$
c) $a = \frac{2(S - V_i t)}{t^2}$ d) All of the them

218. Acceleration is defined as C

a) Rate of change of distance b) Rate of change of displacement
c) Rate of change of velocity d) Rate of change of speed

219. A 5kg mass is falling freely, the weight in the frame of reference of the mass, will be D

a) 5N b) 9.8N
c) 19.6N d) Zero

220. The discus used by athlete has a mass of 1kg. Its weight in Newton is D

a) 98N b) 100N

c) 80N d) 9.8N

221. A body starting from rest covers a distance of 0.45 km and acquires a velocity of 300 km/hr. Its acceleration will be C

a) 0.092 ms^{-2} b) 0.5 ms^{-2}

c) 7.71 ms^{-2} d) 0.15 ms^{-2}

222. The weight of a body falling freely will be D

a) $mg + 6\pi\eta vr$ b) $mg - 6\pi\eta vr$

c) mg d) Zero

223. The average and instantaneous velocities will be equal when a body moves with A

a) Constant (uniform) velocity b) Constant acceleration

c) Variable acceleration d) Retardation

224. Distance covered by a freely falling body in 2 seconds will be B

a) 4.9 m b) 19.6 m

c) 39.2 m d) 44.1 m

225. When a climber reaches the top of a mountain D

a) His mass is now greater b) His weight is now greater

c) His mass is now slightly smaller d) His weight is now slightly smaller

226. What would be magnitude and direction of acceleration which would make the balance reading zero B

a) Zero b) 9.8 ms^{-2} downward

c) 9.8 ms^{-2} upward d) 1 ms^{-2}

227. It is true that C

a) m = a/F b) F = m/a

c) a = F/m d) a = m/F

228. A mass of 5kg moves with an acceleration of 10ms^{-2} force on it is B

a) 10N b) 50N

c) 2N d) 15N

229. The distance covered by a body in time t starting from rest is A

a) $at^2/2$ b) Vt

c) $a^2t/2$ d) at^2

230. Pull of earth on a mass of 20 kg on the surface of earth is B

a) 20N b) 196N

c) 19.6N d) 1960N

231. The product of mass of a particle and its velocity is called C

a) Kinetic energy b) Potential energy

c) Linear momentum d) Force

232. A force of 50N acts on a body for 10 seconds. What will be the change in momentum? B

a) 200N-s b) 500N-s

c) 800N-s d) 5N-s

233. A force which always opposes the motion of a body is called B

a) Impulsive force b) Force of friction (frictional force)

c) Static friction d) Gravitational force

234. According to Stoke's law the viscous or drag force F_d on rain droplet of radius r moving with velocity v is D

a) $6\pi\eta rv^2$ b) $\frac{6\pi\eta v^2}{v}$

c) $\frac{6\pi\eta}{rv}$ d) $6\pi\eta rv$

235. The SI unit of viscosity is B

a) $Kgm^{-1}s^{-2}$ b) $Kgm^{-1}s^{-1}$

c) $Kgms^{-2}$ d) $Kg\text{-}m^{-1}\text{-}s$

236. The Hover craft can attain speed of A

a) 150 km hr^{-1} b) 60 km hr^{-1}
c) 80 km hr^{-1} d) 100 km hr^{-1}

237. When a body moves up a rough inclined plane it is acted upon by C
a) Two forces b) One force
c) Three forces d) Four forces

238. Poise is the unit of A
a) Co-efficient of viscosity b) Co-efficient of elasticity
c) Gravitational force d) None of these

239. When a constant force acts on a mass m initially at rest, the velocity acquired in a direction is proportional to B
a) m b) $\frac{1}{m}$
c) $\sqrt{m}$ d) $\frac{1}{\sqrt{m}}$

240. Machine parts are jammed is due to B
a) Increase in surface tension of lubricant b) Increase in viscosity of lubricant
c) decrease in surface tension of lubricant d) decrease in viscosity of lubricant

241. The dimensional formula for co-efficient of viscosity is B
a) $M^oL^oT^o$ b) $ML^{-1}T^{-3}$
c) $ML^{-2}T^{-2}$ d) $ML^{-1}T^{-1}$

242. A honey drop is falling through air from a height. Its radius is r, its velocity is v and the co-efficient viscosity is η. The viscous force on it will be D
a) $\frac{1}{6\pi\eta v^2}$ b) $\frac{6\pi\eta r}{v}$
c) $\frac{6\pi\eta}{vr}$ d) $6\pi\eta vr$

243. Force of friction on a car wheel of mass m is A
a) μmg b) $\frac{mg}{\mu}$
c) mg d) $\frac{\mu}{mg}$

244. Fluid friction is large at C
a) Low speeds b) Very low speeds
c) High speeds d) Moderate speeds

245. In case of an elastic collision between two bodies B
a) Both momentum and energy are not conserved b) Both momentum and energy are conserved
c) Momentum is conserved but not energy d) Energy is conserved but not momentum

246. The orbital speed of the earth around the sun is approximately. D
a) 30,000 mph b) 50,000 mph
c) 60,000 mph d) 70,000 mph

247. When two bodies separate instantaneously after collision. The collision is said to be A
a) Perfectly elastic b) Perfectly inelastic
c) Partially elastic d) Partially inelastic

248. A lead ball of 50 kg and an iron ball of 25 kg both of the same diameter are allowed to fall from the top of a building. When they are 15 meters above the ground, they have identical D
a) P. E. b) K. E.
c) Momenta d) Acceleration

249. Which of the following statements is correct? A
a) The co-efficient of static friction is greater than the co-efficient of kinetic friction
b) The co-efficient of static friction is less than the co-efficient of kinetic friction
c) The co-efficient of static friction is equal to the co-efficient of kinetic friction

d)

250. If a gunman standing in a stationary boat in water fires the gun in a horizontal direction A

a) The boat will move away from the target
b) The boat will move in the direction of target
c) The boat will spin around d) The boat will capsize

251. When the two bodies having same masses collide with each other while one body is at rest then the velocity of the stationary body will: C

a) Remain constant b) Become zero
c) Increase d) Decrease

252. When raindrops of same mass fall from a height under gravity A

a) The terminal velocity is the same for all drops b) The terminal velocity goes on increasing
c) The terminal velocity goes on decreasing
d) They fall with terminal velocity directly proportional to their size

253. If two bodies collide, then the impulse, which is the product of force an time, has: D

a) Units of force b) Unit of weight
c) Units of velocity d) Unit of momentum

254. A force of 1000 N acts on a body for 0.01 sec. and changes its velocity from 10 m/s to 20 m/s, what will be the impulse? C

a) 100 N-sec b) 50 N-sec
c) 10 N-sec d) 5 N-sec

255. When a ball rolls down an inclined plane making an angle of 30° with horizontal, its acceleration will be B

a) $9.8\ m/s^2$ b) $4.9\ m/s^2$
c) $2.25\ m/s^2$ d) $1.125\ m/s^2$

256. The acceleration of a body sliding on an inclined plane is maximum if the angle of inclination is D

a) 30° b) 45°
c) 60° d) 90°

257. If a body slides along a frictionless plane inclined at an angle θ, then the acceleration of the body is B

a) $g \cos\theta$ b) $g \sin\theta$
c) $\frac{1}{g} \cos\theta$ d) $\frac{1}{g} \sin\theta$

258. The terminal velocity of a spherical droplet of mass density, is directly proportional to A

a) The square of the radius of droplet b) The radius of droplet
c) Half of the radius of droplet d) The square of the diameter of droplet

259. Typical values of co-efficient of static friction μ for smooth surfaces, range from 0.01 to D

a) 2 for rough surfaces b) 1.9 for rough surfaces
c) 1.7 for rough surfaces d) 1.5 for rough surfaces

260. The mass of a body weighing 39.2 N in kg is B

a) 3 b) 4
c) 5 d) 6

261. The instantaneous velocity is equal to the average velocity if body moves with a A

a) Uniform velocity b) Variable velocity
c) Variable acceleration d) Uniform acceleration

262. Applied force F on a body of mass m, moving with acceleration a is C

a) m/a b) a/m
c) ma d) m + a

263. The direction of linear acceleration produced in a moving body is always the same as the direction of D

a) Velocity b) Torque
c) Mass d) Force

264. If Δv is the change in velocity of a body during time interval Δt then the acceleration of the body is D

a) $(\Delta t)(\Delta v)$ b) $\Delta t / \Delta v$

c) $\Delta v - \Delta t$ d) $\Delta v / \Delta t$

265. If a body is moving with constant velocity of 10 m/sec towards north, then its acceleration is A

a) 0 b) 10 m/sec^2

c) 20 m/sec^2 d) 5 m/sec^2

266. Acceleration is defined as the rate of B

a) Change of distance b) Change of velocity

c) Change of speed d) Change of momentum

267. In SI system of units, the velocity is measured in B

a) Centimeter per second b) Meter per second

c) Foot per second d) Miles per second

268. The shortest distance traveled by a body between two fixed points is known as D

a) Distance b) Angular displacement

c) Amplitude d) Linear displacement

269. Whenever a body changes its position with respect to its surroundings, it is said to be in a state of B

a) Rest b) Motion

c) Equilibrium d) None of the above

270. If a body moves about a fixed point or axis its motion is called B

a) Rectilinear motion b) Rotatory motion

c) To and fro motion d) Vibratory motion

271. The to and fro motion about a point executed at regular intervals of time is known as D

a) Rectilinear motion b) Rotatory motion

c) To and fro motion d) Vibratory motion

272. The physical quantity which represents the motion of an object is called _____. A

a) Velocity b) Acceleration

c) Displacement d) Torque

273. The measure of the difference in position between two points or places is called _____. A

a) Displacement b) Velocity

c) Acceleration d) Momentum

274. If the velocity of the body is uniform, i.e. not changing with time, the velocity-time graph is B

a) A curved line b) A straight line

c) A circular line d) None of the above

275. The slope of the velocity-time graph represents A

a) Acceleration b) Speed

c) Torque d) Velocity

276. In the displacement-time graph if the slope of the line increases C

a) The speed decreases b) The acceleration decreases

c) The average velocity becomes greater d) The acceleration increases

277. The change in velocity per unit time is called B

a) Velocity b) Acceleration

c) Displacement d) Torque

278. Acceleration is measured in units of A

a) ms^{-2} b) ms^{-1}

c) N-s d) None of the above

279. In a velocity-time graph if the graph is a straight line parallel to time-axis, then its acceleration will be A

a) Zero b) Minimum

c) Maximum d) None of the above

280. The distance covered by a moving object in one second is called _____. D

a) Velocity b) Acceleration

c) Momentum d) None of the above

281. Speed in a given direction is called _____. A

a) Velocity b) Displacement

c) Acceleration d) None of the above

282. The velocity and acceleration of a body moving with uniform speed in circle are _____. C

a) Parallel b) Opposite

c) Mutually perpendicular d) None of the above

283. In SI units the value of acceleration due to gravity "g" is _____. A

a) $9.8\ ms^{-2}$ b) $9.8\ ms^{2}$

c) $9.8\ ms^{-1}$ d) 9.8 ms

284. Two balls having different masses are thrown upwards simultaneously towards the roof of a building they will reach roof _____. A

a) Simultaneously b) Heavy ball first

c) Light ball first d) None of the above

285. The motion of pendulum is an example of _____. B

a) Rotatory motion b) Vibratory motion

c) Rectilinear motion d) None of the above

286. The intrinsic measure of a body's resistance to acceleration, when a force is applied on it is called B

a) mass b) Inertial mass

c) Relative mass d) None of the above

287. A frame which is not being accelerated is called B

a) A reference axes b) A non-inertial frame of reference

c) An inertial frame of reference d) None of the above

288. Newton's second law of motion in terms of momentum can be defined as C

a) Change in momentum b) Change in impulse

c) Rate of change of momentum d) None of the above

289. The product of force and the duration of impact is called C

a) Torque b) Couple

c) Impulse d) Inertia

290. Elastic collisions are those in which D

a) Linear momentum is conserved b) Potential energy is conserved

c) Kinetic energy is conserved d) Both linear momentum and kinetic energy are conserved

291. A force which resists the motion of a body is called B

a) Impulsive force b) Force of friction

c) Inertia d) None of the above

292. The force of static friction F_s between any two surfaces in contact is opposite to the applied force and can have values given by the equation C

a) $F_s \leq \mu_s F_n$ b) $F_s \geq \mu_s F_n$

c) $F_s = \mu_s F_n$ d) None of the above

293. The force of kinetic friction is opposite to the direction of motion and is given by C

a) $F_k \leq \mu_k F_n$ b) $F_k \leq \mu_k F_n$

c) $F_k = \mu_k F_n$ d) None of the above

294. The value of μ_k and μ_s depends on the nature of surfaces, but μ_k is generally _____. A

a) Less than μ_s b) Greater than μ_s

c) Equal to μ_s d) None of the above

295. Coefficient of viscosity is analogous to the _____. C

a) Coefficient of friction b) Coefficient of static friction

c) Coefficient of kinetic friction d) None of the above

296. The Stoke's law expresses the drag F_d on a sphere of radius r moving with velocity v as _____. D

a) $F_d = 6\pi\mu rv$ b) $F_d = 6\pi\mu rv^2$

c) $F_d = 6\pi\mu v$ d) None of the above

297. The terminal velocity of a sphere of given material (fixed ρ) varies directly with the _____. A

a) Square of the radius b) Cube of the radius

c) Reciprocal of the radius d) None of the above

298. Such machines which are used for transportation over water, marshes and land are called _____. C

a) Aeroplances b) Satellites

c) Hover crafts d) None of the above

299. In machines, friction is minimized by using _____. B

a) Hover crafts b) Lubricants

c) Water d) None of the above

300. Any surface making an angle θ with horizontal is called B

a) Wedge b) Inclined plane

c) Lever d) Screw

301. Empirical formula for friction in solids is given as A

a) $F_s = \mu_s F_n$ b) $F_d = 6\pi\eta rv$

c) $F_s = F_n$ d) None of the above

302. Empirical formula for friction in fluids is given as B

a) $F_s = \mu_s F_n$ b) $F_d = 6\pi\eta rv$

c) $F_s = F_n$ d) None of the above

303. A sheet of paper can be withdrawn from under bottle of milk without dropping it if the paper is jerked out quickly. This is an example of: A

a) Inertia b) Weight

c) Acceleration d) The third law of motion

304. If the velocity of a body changes it may be termed as: D

a) Instantaneous velocity b) Speed of the body

c) Magnitude of displacement d) Deceleration

305. Acceleration is a physical quantity that can be specified completely by: A

a) Both magnitude and direction b) Only magnitude

c) Only direction d) None of the above

306. The shortest distance between two points in a specific direction is called. D

a) Distance b) Acceleration

c) Speed d) Displacement

307. Change in velocity per unit time is equal to: C

a) Distance/time b) Displacement/time

c) Acceleration d) Force/mass

308. Inertia of a body is measured in terms of D

a) Its weight b) Its applied force

c) Its reaction d) Its mass

309. Two bodies are moving in opposite direction with speed v. What is the magnitude of their relative velocity? D

a) 0 b) v

c) $\frac{v}{2}$ d) 2v

310. A car starts from rest and travels forward with constant acceleration. Which of the following statements is true: D

a) The power delivered by the engine decreases b) The momentum of the car remain constant

c) The power delivered by the engine increases d) The power delivered by the engine remains constant

311. A train is brought to a sudden stop its: B

a) Acceleration is reduce to zero b) Velocity is reduced to zero

c) Average acceleration is reduce to zero d) None of these

312. A body moving with constant velocity be: B

a) Changing its direction of motion b) In equilibrium

c) Accelerating d) Traveling in a circle

313. When a body is moving at constant speed, its average speed is equal to: D

a) Thrice its speed b) Twice its speed

c) Half of that its speed d) Its speed

314. A car is moving with uniform velocity then its acceleration is: A

a) Zero b) Constant

c) Increased d) Decreased

315. The area between a velocity-time graph and the time axis is equal to the: B

a) Velocity b) Distance

c) Displacement d) Acceleration

316. Which of the following is not a perfectly elastic collision: B

a) Capture of an electron by a proton b) Collision between glass balls

c) Man jumping on to a moving cart d) All three

317. Two freely falling objects, one 10 kg and one 20 kg are dropped from the same height at the same time. Air resistance is negligible. Which of the following statements is (are) true? C

Both objects have the same potential energy at the top.

Both objects fall with the same acceleration

Both objects have the same speed just before hitting the ground

a) iii only

b) i and ii only

c) ii and iii only

d) i, ii and iii

318. Terminal velocity is usually defined as the C

a) Velocity of shock waves b) Velocity of light in water

c) Velocity at which air resistance balance gravity d) All of the above

319. The velocity of falling rain drop attain limited value because of: C

a) Surface tension b) Upthrust due to air

c) Viscous force exerted by air d) Air current

320. A stone and a piece of paper are simultaneously released from the top of a vertical evacuated tube, which one of the following statements is correct? B

a) The stone and paper remain at rest

b) The stone and paper strike the base of the tube at the same time

c) The stone strikes the base of the tube before the paper

d) The stone strikes the base of the tube after the paper

321. A body falling freely under the action of gravity has. C

a) Minimum weight b) Maximum weight

c) No weight d) Variable weight

322. When raindrops of equal mass fall under the influence of gravity, their terminal velocity is. A

a) Same for the drops b) Inversely proportional to their size

c) Directly proportional to their size d) None of these

323. The acceleration due to gravity in a falling body is due to: C

a) Its motion b) Pull of the moon

c) Pull of the earth d) Pull of the sun

324. A boy sitting in train moving at a constant velocity throws a ball straight up into the air the ball will drop. C

a) Behind him b) In front of him

c) In his hand d) Beside him

325. A boy remains at rest or continues to move, with uniform velocity unless acted upon by a/an. D

a) A balanced force b) Torque

c) Momentum d) Unbalanced force

326. The laws of motion deal with: A

a) Force and acceleration b) Width and length

c) Vertical and horizontal distance d) Viscosity and density

327. If the graph between mass and acceleration is straight line then: A

a) $m \alpha a$ b) $a \alpha 1/m$

c) $m \alpha 1/a2$ d) $m2 \alpha 1/a$

328. A boy sitting in a moving train is facing the engine. He tosses a coin up. The coin falls behind him. The train is moving. C

a) Forward with uniform speed b) Backward with uniform speed

c) Forward with uniform acceleration d) Backward forward with uniform acceleration

329. Newton's laws of motion are applicable to: A

a) Inertial frames of reference b) Relativistic frames of reference
c) All frames of reference d) None of these

330. A spaceship orbiting the earth is an example of Newton's: D

a) First law b) Second law
c) Third law d) Law of gravitation

331. Newton's first law of motion gives definition of: B

a) Force b) Inertia
c) Both a) & b) d) None

332. During free fall of air friction is negligible then acceleration of bodies of different masses is: A

a) The same for all the masses b) Different for different masses
c) Different for different vertical positions d) Both a) & b)

333. A body moving with velocity V can be stopped by a force F in distance X. Same body moving with velocity 2V can be stopped by a force 2F in a distance equal to: B

a) X b) 2X
c) 4X d) X/2

334. A car travels at 30 kilometers / hour for 15 kilometers. It then increases its average speed to 60 km/hr. for the next 30 kilometers. The overall average speed for the 45 km is. B

a) 30 km/hr b) 45 km/hr
c) 35 km/hr d) 40 km/hr

335. When two bodies having the identical masses move along the same straight line with different velocities in the same direction collide with each other after the collision their velocities will: A

a) Interchange with one another b) Remain the same
c) The one body has acquired all the velocity & second becomes stationary d) Both gain equal velocities

336. Boat A is moving at 40 km/hr and boat B is moving at 20 km/hr, which one of the following is not a possible value of their relative velocity? C

a) 10 km/hr b) 20 km/hr
c) 30 km/hr d) 40 km/hr

337. A sailor walks south wards at 3m/s across a ship which is traveling west at 4m/s the velocity of the sailor with respect of the sea is. A

a) 5 m/s in south of west b) 7 m/s in south of west
c) 1 m/s in west of south d) 5 m/s in west of south

338. An acrobats jumps from a height of 5m on to a sea-saw. The velocity with which he hits the sea-saw is: ($g = 10 m/s^2$). C

a) 20 m/s b) 30 m/s
c) 10 m/s d) Zero

339. A car starting from rest moves down on an inclined road with a uniform acceleration. It travels for 100 m in 10 sec. The speed of the car at the end of 10 sec is nearly. B

a) 10 m/s b) 20 m/s
c) 40 m/s d) 100 m/s

340. How many meters a 5 kg ball starting from rest fall freely in 1 sec? B

a) 9.8 m b) 4.9 m
c) 19.6 m d) 2 m

341. How long will a car with an acceleration of 4 m/s^2, take to go from 30 m/s to 50 m/s? C

a) 10 sec b) 20 sec
c) 5 sec d) 30 sec

342. Two identical balls are thrown vertically upwards. One with an initial speed twice that of the other. he ball with the greater initial speed will reach to a height. C

a) $\sqrt{2}$ times that of the other b) Twice that of the other
c) 4 times that of the other d) 8 times that of the other

343. The body is initially at rest, it starts with an acceleration of $5 m/s^2$ is 10 sec. The total distance covered by it is. C

a) 50 m b) 500 m
c) 250 m d) 300 m

344. A stone dropped from a tower takes 5 seconds to reach the earth. Its velocity at the earth is. A

a) 49 m/s b) 160 ft/s

c) 9.8 m/s d) a) & b) have the same meaning

345. What is the average velocity of a car which covers a distance of 30 miles in 0.5 hours? B

a) 15 mph b) 30 mph

c) 45 mph d) 60 mph

346. A bomb is dropped from an airplane moving horizontally with a speed of 600 kms/hr. If the air resistance is negligible, the bomb will reach the ground in 5 sec when the altitude of the plane is approximately. C

a) 80 m b) 100 m

c) 125 m d) 800 m

347. A body dropped from the top of a tower 200ft high has an initial speed of 25 ft/sec. What will be velocity of the body after 1 second of fail? B

a) 52 ft/sec b) 57 ft/sec

c) 62 ft/sec d) 48 ft/sec

348. A ball is thrown vertically up and comes back to ground in four second. The initial velocity of the ball is: (taking g = 9.8 m/s) B

a) 4 m/s b) 19.6 m/s

c) 25 m/s d) 30 m/s

349. If the resultant force on an object is zero the object will move with: B

a) Constant speed b) Constant velocity

c) Constant deceleration d) Variable deceleration

350. The force of friction, generated to resist the motion, occurs between connecting media in: D

a) Liquids b) Solids

c) Gases d) All of these

351. The force per unit length is: D

a) Pressure b) Stress

c) Strain d) Surface tension

352. The concept of force might best be described as: B

a) The push or pull

b) A quantity tending to change the shape or state of motion of a body

c) Energy in motion

d) Power transmitted from one place to another

353. Stokes's law holds for: D

a) Bodies of all shape b) Motion through free space

c) Horizontal motion of particles d) Motion through a viscous medium

354. When a force is applied to a body, several effects are possible. Which of the following effects could not occur? D

a) The body speed up b) The body rotates

c) The changes direction d) The mass of the body decreases

355. The magnitude of the resultant of two forces may be increased by: B

a) Increasing the angle between them b) Decreasing the angle between them

c) Drawing a parallelogram to represent them d) None of the above

356. The strongest of the forces is: C

a) The electromagnetic force b) The weak force

c) The strong nuclear force d) The gravitational force

357. Machine parts are jammed in winter due to: A

a) Increase in viscosity of the lubricant b) Decrease in viscosity of the lubricant

c) Increase in surface tension of the lubricant d) Decrease in surface tension of lubricant

358. A body moves with constant speed in a straight line. Which of the following statements must be true? A

a) No net force cats on the body

b) A single constant force acts on the body in the direction of motion

c) A single constant force acts on the body in the direction opposite to the motion

d) A constant net force acts on the body in the direction of motion

359. Which of the following statement is incorrect? B

a) Most of the collisions on the macroscopic scale are inelastic collision
b) In a perfectly inelastic collision, there is a complete loss of K. E.
c) Forces involved in elastic collision are conservative in nature
d) Oblique collision is that on which the colliding bodies do not move along the same straight line path

360. A bird sits on a telegraph wire 3 km long. The additional tension produced in the wire is resultant: C
a) Infinite b) Equal to the weight of the bird
c) Less than the weight of the bird d) More than the weight of the bird

361. To drive nail into a wall as far as possible with an below, the head of the hammer should have: B
a) Large mass and slow speed b) Large mass and high speed
c) Small mass and high speed d) Small mass and slow speed

362. When a body is stationary C
a) There is no force acting on it
b) The forces acting on it are not in contact with it
c) The forces acting on it are balanced d) The body is in vacuum

363. A truck towing a trailer is accelerating on a level road. The force exerted by the truck on the trailer is B
a) Equal to the force the trailer exerts on the truck
b) Greater than the force the trailer exerts on the truck
c) Less than the force the trailer exerts on the truck
d) Equal to the force the trailer exerts on the road

364. Walking on the ground is an example of B
a) Friction b) Third law of motion
c) Motion d) Torque

365. In bicycles etc, sliding friction is converted into rolling friction with the help of _____. D
a) Wheels b) Inclined planes
c) Grease d) Ball bearings

366. If the applied force on a body increases, the friction force b/w body and surface of sliding be: A
a) Increased b) Decreased
c) Remain constant d) None of these

367. The frictional resistance between its various layers of fluids is called: B
a) Viscous drag b) Viscosity
c) Friction d) Up thrust

368. If there is no external force applied to a system, then the total momentum of that system: B
a) Turn to zero b) Remains constant
c) Is maximum d) Is minimum

369. The impulse of a force during the interaction of two bodies can be calculated as the product of: C
a) Force and distance b) Force and mass
c) Force and time d) Mass and acceleration

370. If two bodies of equal mass collide elastically then D
a) Their velocities are added to each other b) Their velocities are subtracted
c) Their velocities do not change d) They exchange their velocities

371. If is difficult to stop a body moving with a greater velocity than another body which is moving with a lesser velocity, this is due to its. D
a) Mass b) Velocity
c) Acceleration d) Momentum

372. A light body collides with a very large mass at rest. It bounces off at the velocity _____ initial velocity. A
a) Equal to b) More than
c) Less than d) None of these

373. If the rate of change of momentum with respect to time is zero, then: C
a) The momentum is a function of time b) The momentum is not conserved
c) The momentum is constant d) Some force acts

374. A rocket works on the principle of conservation of: C
a) Mass b) Energy

c) Linear Momentum d) Angular momentum

375. When a very massive body collide with a stationary body having very little mass, the velocity of the lighter body after collision will be: B

a) Equal to the velocity of massive body b) Greater than the velocity of massive body
c) Less than velocity of massive body d) None of the above

376. In an elastic collision b/w a very massive body at rest and a light of very high velocity, the velocity of light body after collision. C

a) Decreases b) Remains same
c) Is same in magnitude but opposite d) First increases then decreases

377. Momentum of a moving mass is the amount of: D

a) Energy possessed by body b) Inertia possessed by a body
c) Work possessed by a body d) Motion possessed by a body

378. Impulse of a force is _____ quantity. A

a) Vector b) Scalar
c) Physical d) Chemical

379. The rate of change of linear momentum of a body is equal to B

a) The applied torque b) The applied force
c) Impulse d) None of the above

380. _____ is also called the quantity of motion. B

a) Acceleration b) Momentum
c) Force d) Energy

381. A bullet fired from a rifle with the velocity V, has _____. D

a) Very much energy b) Very large mass
c) Potential energy d) Kinetic energy

382. A photon is allowed to hit a cricket ball, there will be _____ of the ball. C

a) A change in position b) A change in momentum
c) A change in position & momentum d) No change in momentum & position

383. When a bullet is fired from gun, the velocity of gun is. A

a) Lesser than that of the bullet b) Equal to zero
c) Equal to that of the bullet d) Greater than of the bullet

384. The acceleration of a spherical ball on a smooth inclined plane is maximum, when the angle of inclination with the horizontal is B

a) 0° b) 90°
c) 60° d) 80°

385. In an inclined plane, velocity of the body is max. When the inclination of the plane is D

a) 30° b) 60°
c) 45° d) 90°

386. A force of 10 N gives an acceleration of 2 m/s^2 to a mass of 5 Kg. The same force would produce an acceleration of: B

a) 4 m/s^2 when acting on a mass of 10 Kg b) 4 m/s^2 when acting on a mass of 2.5 Kg
c) 10 m/s^2 when acting on a mass of 2 Kg d) 5 m/s^2 when acting on a mass of 10 Kg

387. 10 N force given an acceleration of $2ms^{-2}$ to 5 Kg mass, which of the following is true for the same force? D

a) Impulsive force is of 10 N-S b) K. E. of the object is 10 joules
c) Power applied is of 20 watt d) Weight of the object is 49 N

388. A boy with mass 60 Kg is carrying a bag of flour weighing 30 N. What is the reaction that the floor exerts on the boy? A

a) 318N b) 628N
c) 700N d) 330N

389. A 10 kg fragment falling towards that earth has a net downwards acceleration of 5 m/s^2. The net downwards force acting on the fragment is: C

a) 5 N b) 10 N
c) 50 N d) 98 N

390. A car is traveling at 15 m/s and come to a sudden stop and takes 10 seconds to stop. If the average breaking force is 3000 N, find the mass of the car. A

a) 2000 kg b) 2 kg

c) 3000 kg d) 150 kg

391. If a force of 10 N makes on angle of 30° with x-axis, its y-component is given by: B

a) 8.66 N b) 5.0 N

c) 4.33 N d) 0.866 N

392. The statement, "The total momentum of our isolated system of bodies is constant" is called the law of: C

a) Conservation of mass b) Conservation of energy

c) Conservation of momentum d) Conservation of force

393. In a tug of war match one side is pulling with a force of three thousand Newton. What force will be applied on the other side to keep it in equilibrium? B

a) Zero b) 3000 N

c) 6000 N d) 15000 N

394. The net force acting on the body of mass 10 kg moving with uniform velocity of 4 cms^{-1} is: D

a) 40 N b) 4 N

c) 4 N d) Zero

395. An Eskimo is pulling a sledge across level snow. The sledge has a mass of 25 kg. The Eskimo pulls with a horizontal force of 60 N and the constant force of friction is 20 N. The acceleration of the sledge is. C

a) 0.80 m/s^2 b) 0.625 m/s^2

c) 1.6 m/s^2 d) 1.8 m/s^2

396. A force of 40 N is needed to set a 10 Kg steel box moving across a wooden floor. The coefficient of static friction is. C

a) 0.04 b) 0.25

c) 0.40 d) 4

397. A car of mass 800 kg is towing a trailer of mass 200 kg, both are accelerating steadily at 0.50 m/s^2. They are getting faster, Assuming the road is frictionless, the forward force of road on the driver wheels of the car will be C

a) 40 N b) 50 N

c) 500 N d) 20 N

398. The coefficient of static friction for a metal on ice is 0.5 The forces need to set a 50kg box is motion is ($g = 10m/s^2$) C

a) 0.5 N b) 50 N

c) 250 N d) 25 N

399. A body of mass 5 kilograms is moving towards east with a velocity of 10m/sec, its momentum will be: D

a) 150 Newton b) 150 kgs

c) 100 Newton d) None of the above

400. A particle having a mass 0.5 kg is projected under gravity with a speed of 98 ms^{-1} at an angle of 30°. The magnitude of the change in momentum in N/sec of the particle after 10 seconds is. C

a) 0.5 b) 49

c) 98 d) 490

401. A mass of 5kg, possess a momentum of 50kg m/s, when moves with the speed of: B

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

c) 20 m/s d) 45 m/s

402. Two masses of 10kg and 8kg respectively, are moving vertically by the help of a string passed over a frictionless pulley. What will be the downward acceleration of 10kg mass ($g = 10m/s^2$) A

a) 1.11 m/s^2 b) 10 m/s^2

c) 8 m/s^2 d) None

403. Two masses of 10kg and 8kg respectively, are moving vertically by the help of a string passed over a frictionless pulley. What will be the downward tension of 10kg mass ($g = 10m/s^2$) C

a) 1.11 m/s^2 b) 10 m/s^2

c) 88.8 m/s^2 d) None

404. Body A and B have same masses and placed 2 cm part on a uniform surface. If body is A is pushed towards the body B with velocity of 20 m/s. What will be the velocity of A after an elastic collision with B. C

a) 20 m/s b) 40 m/s

c) Zero d) 30 m/s

405. Two forces of 6N and 8N can produce a resultant of. C

a) 0 N b) 1 N

c) 10 N d) 18 N

406. The resultant force of 12 N acts for 5 s on a mass of 2 Kg. the change in momentum of the mass is: C

a) 20 Kg m/s b) 50 Kg m/s

c) 60 Kg m/s d) 80 Kg m/s

407. An accelerated rocket of mass 2 kg, reaches to a speed of 50 m/s. the magnitude of momentum of gasses ejected by the rocket is: B

a) 50 N-sec b) 100 N-sec

c) 200 N-sec d) 25 N-sec

408. If the velocity of the body is increased to 100% then linear momentum of the body increases to: B

a) 50% b) 100%

c) 10% d) 35%

409. Rocket of mass 5000kg ascends with an acceleration of $2m/sec^2$. The upward force on the mass is _____ N. ($g=10\ m/s^2$) B

a) 6000 N b) 60,000 N

c) 600,000 N d) Zero

410. A 0.2 kg bullet is fired from a 5 kg gun with velocity 20 m/s, the recoil of the gun is: B

a) 8 m/s b) 0.8 m/s

c) 10 m/s d) 20 m/s

411. The direction of the instantaneous velocity at a point is always: B

a) Along that point b) Along the tangent at that point

c) Perpendicular to the tangent at that point d) Opposite to that point

412. If a body continuously changes its position with respect to the surroundings, it is said to possess. B

a) Equilibrium b) Motion

c) Vibration d) None of the above

413. If a body moves with uniform velocity, then the distance time graph is: C

a) Hyperbola b) Parabola

c) Straight line d) Curve

414. The displacement made in unit time is called: C

a) Instantaneous velocity b) Average velocity

c) Velocity d) Speed

415. Velocity is the rate of change of: A

a) Displacement b) Distance

c) Speed d) Momentum

416. Acceleration is defined as: B

a) The rate of change of speed b) The rate of change of velocity

c) The rate of change of momentum d) The rate of change of displacement

417. Speed is the magnitude of the: B

a) Acceleration b) Velocity

c) Momentum d) Average velocity

418. If a body is moving with uniform velocity the average and instantaneous velocity have: D

a) Different value at each point b) Same value at each point

c) Being parallel to each other d) None of the above

419. A body, which does not change its position with respect to time, is said to be at: A

a) Rest b) Equilibrium

c) Same state d) Motion

420. A curved distance-time graph is obtained when body is moving with: A

a) Variable velocity b) Variable acceleration

c) Same speed d) Uniform velocity

421. The gradient distance-time graph determine the: B

a) Acceleration b) Average speed

c) Velocity d) Instantaneous velocity

422. The acceleration of a body is equal to zero, when the body is moving with: B

a) Constant speed b) Uniform velocity
c) Variable speed d) Changed direction

423. The greater the gradient of the displacement-time graph, the: A
a) Larger is the velocity of the body b) Smaller is the velocity of the body
c) Larger is the displacement of the body d) Smaller is the average speed

424. The term $\lim_{\Delta t \to 0} \frac{\overrightarrow{\Delta V}}{\Delta t}$ is defined as: C
a) Linear acceleration b) Average acceleration
c) Instantaneous acceleration d) Variable acceleration

425. Negative acceleration is also called: A
a) Retardation b) Relaxation
c) Re-acceleration d) None of these

426. The motion of a body is said to be uniformly accelerated rectilinear motion when it is moving with: B
a) Uniform speed b) Uniform acceleration
c) Uniform velocity d) Constant momentum

427. An object starting from rest accelerates uniformly, which of the following is not true: C
a) Its kinetic energy is proportional to its displacement
b) Its speed is proportional to the square root of its displacement
c) Its kinetic energy is proportional to the square of its speed
d) Its velocity is proportional to the square of the elapsed time

428. An object covering distance in direct proportion to the square of time elapsed. What conclusion might you draw about its acceleration? B
a) It is increasing b) Remains constant
c) Come zero d) Nothing is certain

429. The displacement of a body is zero. The distance covered: C
a) Is zero b) Is not zero
c) May or not be zero d) Depends upon the acceleration

430. In order to locate the exact position of a moving body, after a certain interval of time, we need to know directly: B
a) Acceleration and velocity b) Speed and direction
c) Velocity and direction d) Distance and acceleration

431. Kinematics is a part of mechanics, which deals with the description of motion: C
a) In terms of force b) In terms of energy
c) Without involving force d) Nothing is certain

432. A particle has moved from one position to another position: C
a) Its distance is zero b) Its displacement is zero
c) Neither distance nor displacement is zero d) Average velocity is zero

433. The force acts on the body then the acceleration produced is directly proportional to the: A
a) Force b) Velocity
c) Speed d) Mass

434. Which of the following changes when a particle is moving with uniform velocity? D
a) Speed b) Velocity
c) Acceleration d) Position vector

435. If a ball thrown upward, its velocity: C
a) Decreases, and least at the highest point b) Remains constant
c) Decreases and comes to zero at the highest point d) Remain increasing

436. The acceleration due to gravity in a free falling body is due to: A
a) Pull of the earth b) Its motion
c) Increasing acceleration d) Increasing momentum

437. The gravitational pull of the earth gives the _____ to a free falling body: C
a) Uniform velocity b) Constant mass
c) Uniform acceleration d) Uniform weight

438. If a small body falls freely near the earth, its acceleration: D
a) Increases b) Decreases

c) Is zero d) Remains the same

439. Dropping from rest, body x falls freely for 4 seconds and body y falls freely for 2 seconds. Comparing with body, body x falls: D

a) Half as far b) The same distance
c) Twice as far d) Four times as far

440. A coin "C" is project horizontally at the same time as another coin "D" is released and allowed to fall. If resistance is neglected and both start at the same height: A

a) C & D will both reach ground at the same time b) C will reach the ground first
c) D will reach the ground first d) The masses of the coins must be known, before decide it

441. A Spaceship is traveling from our galaxy to the Andromeda Galaxy, in the deep space where the gravitational field due to surrounding galaxies is zero, then if the drive motors are off then ship must be: D

a) Stationary b) Decrease in speed
c) Increase in speed d) Maintaining present speed

442. When a body falls freely under gravity: C

a) It moves with constant velocity b) It moves with constant speed
c) It moves with constant acceleration d) It covers equal distances in equal interval of time

443. If a ball is just let fall from the window of a moving train, the ball hit the ground, following a: B

a) Circular path b) Parabolic path
c) Hyperbolic path d) Elliptical path

444. If a car is traveling due south with a decreasing speed, then the direction of the car's acceleration is: C

a) Due east b) Due west
c) Due north d) Due south

445. If a body suddenly stops then its _____ is zero: B

a) Initial velocity b) Final velocity
c) Acceleration d) Momentum

446. With the increase in mass, the force required to produce the acceleration: A

a) Increases b) Decreases
c) Doubles d) Halved

447. A car is moving on a straight road with uniform speed. What are the forces acting on the car? A

a) Its weight balanced by the reaction of the road b) Its mass balanced by the acceleration
c) The weight of the car and the velocity of the car d) All of the above

448. When a body is stationary: C

a) There is no force acting on it b) The forces acting on it are not in contact with it
c) The forces acting on it balance each other d) The body is in vacuum

449. The agency, which when applied to a body, changes or tends to change, its state of rest or of uniform motion: D

a) Momentum b) Acceleration
c) Inertia d) Force

450. The ratio of the force applied on a body to the acceleration produced by that force is called: B

a) Weight b) Mass
c) Tension d) Momentum

451. The force arises from the roughness of surfaces of two bodies in contact is: D

a) Gravitational force b) Force of attraction
c) Friction free d) None of the above

452. In C. G. S. system the unit of force is: C

a) Newton b) Erg.
c) Dyne d) Joule

453. When a falling object reaches a speed where force of air resistance is equal to its weight it: C

a) Is flying b) Will begin to slow down
c) Has reached its terminal speed d) All of the above

454. When the friction between the surface of an inclined plane and an object is equal to the D

component of the weight of the object parallel to the plane, the object:

a) Remain at rest on the plane

b) Moves down the plane with acceleration equal to g sin θ

c) Moves down the plane with acceleration equal to g

d) Moves down the plane without any acceleration

455. Which one of the following is not true: D

a) Force can change the magnitude of the velocity b) Force can change the direction of velocity

c) Force can produce acceleration or deceleration d) Force can reduce the mass of a body

456. The force exerted by a string when it is subject to pull is: C

a) Gravitational force b) Acceleration

c) Tension d) Inertia

457. The property of fluids to which they resist their own flow is called: B

a) Velocity b) Viscosity

c) Surface tension d) Inertia

458. If the applied force F is increased, then the force of friction f_____. A

a) Increases b) Decreases

c) Remain the same d) Continuously varying

459. Sliding friction is slightly _____ than the limiting friction: B

a) Greater b) Less

c) Equal d) None of these

460. Bodies moving through fluids (liquids or gases) experience a retarding force, which is called: D

a) Coefficient of friction b) Coefficient of viscosity

c) Coefficient of dynamics d) None of the above

461. The maximum value of force of friction is known as: B

a) Static friction b) Limiting friction

c) Sliding friction d) Dynamic friction

462. Which one of the following surfaces in contact has maximum co-efficient of friction? B

a) Wood and wood b) Steel and steel

c) Rubber and dry concrete d) Rubber and wet concrete

463. Which of the following should be decreased to transport a massive cylinder by rolling on a flat surface? A

a) Co-efficient of dynamic friction b) Limiting friction

c) Normal friction d) Weight

464. The wheels are made circular because: B

a) Less material is used b) Rolling friction is less than sliding friction

c) It is easier to inflate them d) It is easier to deflate them

465. The tires are made of rubber and not of iron because: A

a) Friction between concrete and iron is higher than the friction between rubber and concrete

b) Friction between concrete and iron is lower than the friction between rubber and concrete

c) Rubber is deeper than iron

d) Iron tires will produce sound

466. Aeroplanes, Jets etc. are streamlined to reduce: D

a) Dynamic friction b) Sliding friction

c) Rolling friction d) Fluid friction

467. A horse pulls a card harder during the first few steps because: A

a) Limiting friction is higher than the kinetic friction

b) Kinetic friction is higher than limiting friction

c) Sliding friction is higher than rolling friction d) Friction force stops acting after few steps

468. When a body moves up a rough inclined plane it is acted upon by: D

a) One force b) Two forces

c) Three forces d) Four forces

469. The use of wheel and ball bearing is based on the fact that: A

a) Sliding friction can be converted into rolling friction

b) Rolling friction can be converted into sliding friction

c) Static friction can be converted into dynamic friction

d) None of these

470. It is difficult to move a cycle along the ground with breaks on because: A

a) Sliding friction is more than rolling friction
b) Rolling friction is greater than sliding friction
c) Sliding friction opposes motion on the road
d) Rolling friction opposes motion on the road

471. A block has weight 'W' and it held against a vertical wall by applying a horizontal force 'F'. Then minimum value of 'F' is: D

a) Less than W
b) Equal W
c) Greater than W
d) Not settled by data

472. The rate of change of momentum is _____ the force acting on it: C

a) Greater
b) Smaller than
c) Equal to
d) Varies continuously with

473. If the rate of change of momentum with respect to time is zero, then: D

a) The momentum is a function of time
b) The momentum is not conserved
c) The momentum is constant
d) Some force acts

474. If no unbalanced force acts on the system then: D

a) Its momentum is a function of time
b) Its momentum is not a function of time
c) Its momentum changes with distance
d) Its momentum is conserved

475. A system of particles, on which no external force acts though the particles of the system interact with each other, is called an: B

a) Isobaric system
b) Isolated system
c) Adiabatic system
d) Enclosed system

476. It is difficult to stop a body moving with a greater velocity than another body which is moving with a lesser velocity. This is due to: B

a) Acceleration
b) Momentum
c) Force
d) Speed

477. A group of objects whose mutual interaction is much greater than their interaction with other objects can frequently be treated as: A

a) Isolated
b) Disturbed
c) Non-isolated
d) Physical

478. Due to the application of impulse during the collision between the bodies, the momentum is: A

a) Changed
b) Remain constant
c) Increased
d) Decreased

479. Impulse of a force is _____ quantity: A

a) Vector
b) Scalar
c) Physical
d) Chemical