

AL HUDA SCIENCE ACADEMY

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Most Important MCQs of Physics

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1. Which one is a non-physical quantity?

- A. Temperature
- B. Density
- C. Colour ✓**
- D. Distance

2. Quantities which can be measured directly and indirectly are called:

- A. Physical quantities ✓**
- B. Non-physical quantity
- C. Base quantities
- D. Derived quantities

3. Which of the following quantities is a base quantity?

- A. Speed
- B. Temperature ✓**
- C. Density
- D. Volume

4. One femtometre is equal to:

- A. 10^{-9} m
- B. 10^{-15} m
- C. 10^{-15} m ✓**
- D. 10^{15} m

5. The SI unit of intensity of light is:

- A. Ampere
- B. Candela ✓**
- C. Kelvin
- D. Mole

6. The number of base units in SI are:

- A. Three
- B. Five
- C. Six
- D. Seven ✓**

7. The SI unit of plane angle is:

- A. Degree
- B. Radian ✓**
- C. Steradian
- D. None

8. The quantity 0.00004 m can be written in scientific notation as:

- A. 4×10^2 m
- B. 4×10^{-12} m
- C. 4×10^8 m

D. $4 \times 10^{-5} \text{ m}$ ✓

9. In SI, the unit of mass is:

A. Kilogram (Kg) ✓

B. Gram (g)

C. Milligram (mg)

D. Mol

10. Prefix pico is equal to:

A. 10^{18}

B. 10^6

C. 10^{-12} ✓

D. 10^{-6}

11. Pascal is the SI unit of:

A. Force

B. Tension

C. Pressure ✓

D. Speed

12. The unit of volume is:

A. Meter

B. Pascal

C. Cubic meter (m^3) ✓

D. Second

13. 3.3 GHz is equal to:

A. $3300 \times 10^6 \text{ Hz}$

B. $3.3 \times 10^6 \text{ Hz}$

C. $3.3 \times 10^9 \text{ Hz}$ ✓

D. $3.300 \times 10^{15} \text{ Hz}$

14. One megameter is equal to:

A. 10^6 m ✓

B. 10^9 m

C. 10^{12} m

D. 10^3 m

15. Diameter of a hydrogen atom is approximately:

A. 10^{-10} m ✓

B. 10^{-6} m

C. 10^{-15} m

D. 1 mm

16. The least count of Vernier Callipers is:

A. 0.1 mm

B. 0.01 mm

C. 0.01 cm ✓

D. 0.001 cm

17. Significant figures in 1.25×10^2 m are:

A. 1

B. 2

C. 3 ✓

D. 4

18. Distance is a _____ quantity.

A. Vector

B. Scalar ✓

C. Base

D. Derived

19. Which of the following is a vector quantity?

A. Speed

B. Weight ✓

C. Work

D. Frequency

20. The product of velocity and time is equal to:

A. Force

B. Acceleration

C. Displacement ✓

D. Distance

21. Shortest distance between two points is called:

A. Distance

B. Displacement ✓

C. Speed

D. Velocity

22. Falcon can fly at a speed of:

A. 200 km h^{-1} ✓

B. 300 km h^{-1}

C. 400 km h^{-1}

D. 100 km h^{-1}

23. The time rate of change of velocity is called:

A. Speed

B. Displacement

C. Acceleration ✓

D. Torque

24. The value of gravitational acceleration (g) is approximately:

- A. 1.6 m s^{-2}
- B. 10 m s^{-2} ✓**
- C. 98 m s^{-2}
- D. 20 m s^{-2}

25. Newton's first law of motion is also known as:

- A. Law of momentum
- B. Law of inertia ✓**
- C. Law of gravitation
- D. Law of force

26. Formula for Newton's second Law of motion is:

- A. $F = ma$ ✓**
- B. $F = m/a$
- C. $F = a/m$
- D. $F = m^2a^2$

27. Product of mass and velocity is:

- A. Force
- B. Power
- C. Torque
- D. Momentum ✓**

28. The rate of change in momentum of a body is equal to:

- A. Torque
- B. Energy
- C. Force ✓**
- D. Velocity

29. The turning effect of a force is called:

- A. Momentum
- B. Torque ✓**
- C. Pressure
- D. Work

30. 1 MJ (Mega Joule) is equal to:

- A. 10^3 J
- B. 10^6 J ✓**
- C. 10^9 J
- D. None of these

31. Which of the following is most suitable to measure the thickness of a paper?

- A. Meter rule
- B. Measuring tape
- C. Vernier Callipers

D. Micrometer Screw Gauge ✓

32. A measuring cylinder is used to measure:

- A. Mass
- B. Volume ✓**
- C. Area
- D. Level of liquid

33. Which of the following readings is correct using Vernier Callipers?

- A. 3.4 cm
- B. 3.47 cm ✓**
- C. 3.475 cm
- D. 3.5 cm

34. A student measures the thickness of a sheet as:

- A. 6×10^{-25} m
- B. 1×10^{-4} m ✓**
- C. 1.2×10^{-15} m
- D. 4×10^{-2} m

35. Vernier Callipers was invented by:

- A. Pierre Vernier ✓**
- B. Newton
- C. Einstein
- D. Pascal

36. Very small lengths are measured with:

- A. Meter rule
- B. Micrometer Screw Gauge ✓**
- C. Measuring tape
- D. None

37. The least count of a measuring tape is:

- A. 1 mm ✓**
- B. 0.1 mm
- C. 0.01 mm
- D. 0.001 mm

38. Least count of micrometer screw gauge is:

- A. 1 mm
- B. 0.01 mm ✓**
- C. 0.1 mm
- D. 0.001 mm

39. Least count of meter rod is:

- A. 1 mm ✓**

- B. 0.1 mm
- C. 1 cm
- D. 10 cm

40. The least count of Vernier Callipers is:

- A. 0.1 mm
- B. 0.01 cm ✓**
- C. 0.001 cm
- D. 1 mm

41. The least count of digital Vernier Callipers is:

- A. 0.1 mm
- B. 0.01 mm ✓**
- C. 0.001 mm
- D. 0.0001 mm

42. Pierre Vernier was a _____ scientist.

- A. French ✓**
- B. German
- C. English
- D. American

43. Significant figures in 1.25×10^2 m are:

- A. 1
- B. 2
- C. 3 ✓**
- D. 4

44. Significant figures in 0.000125 km are:

- A. 3 ✓**
- B. 4
- C. 5
- D. 6

45. An electronic timer can measure time interval as short as:

- A. $1/10$ s
- B. $1/100$ s
- C. $1/1000$ s
- D. $1/10000$ s ✓**

46. Rounding 3.4567 to 3 significant figures gives:

- A. 3.45
- B. 3.46 ✓**
- C. 3.456
- D. 3.457

47. A scalar is a physical quantity described completely by its:

A. Magnitude ✓

B. Direction

C. Force

D. Weight

48. One method of addition of vectors is:

A. Graphical method (Head-to-tail) ✓

B. Inverse method

C. Arithmetic method

D. None

49. Which of the following is a vector quantity?

A. Speed

B. Frequency

C. Weight ✓

D. Work

50. Distance is a _____ quantity.

A. Scalar ✓

B. Vector

C. Base

D. Derived

51. Which is a scalar quantity?

A. Acceleration

B. Velocity

C. Weight

D. Energy ✓

52. A single vector having the same effect as all original vectors combined is called:

A. Resultant vector ✓

B. Unit vector

C. Position vector

D. Equal vector

53. If a body does not change its position with respect to an observer, it is in:

A. Rest ✓

B. Motion

C. Variable motion

D. Uniform motion

54. A motorcyclist standing on the road is an example of:

A. Rest ✓

B. Motion

C. Linear motion

D. Random motion

55. If a body does not change position with respect to surroundings, it is at:

A. Rest ✓

B. Motion

C. Speed

D. Velocity

56. The numerical ratio of displacement to distance is:

A. Equal to or less than one ✓

B. Always equal to one

C. Always less than one

D. Always greater than one

57. A ball is dropped from a tower; distance covered in 1st second is:

A. 100 m

B. 50 m

C. 10 m

D. 5 m ✓

58. Change in position is called:

A. Distance

B. Displacement ✓

C. Speed

D. Velocity

59. Distance is a _____ quantity.

A. Scalar ✓

B. Vector

C. Derived

D. None

60. The product of velocity and time is equal to:

A. Displacement ✓

B. Distance

C. Speed

D. Acceleration

61. Length of the actual path of motion is called:

A. Distance ✓

B. Displacement

C. Velocity

D. Speed

62. Shortest distance between two points is called:

A. Distance

B. Displacement ✓

C. Speed

D. Velocity

63. Which of the following is correct?

A. $S = vt$ ✓

B. $S = v/t$

C. $t = Sv$

D. $v = St$

64. Falcon can fly at a speed of:

A. 100 km h^{-1}

B. 200 km h^{-1} ✓

C. 300 km h^{-1}

D. 400 km h^{-1}

65. The fastest land mammal (Cheetah) has a speed of:

A. 110 km h^{-1} ✓

B. 130 km h^{-1}

C. 120 km h^{-1}

D. 140 km h^{-1}

66. A ball is thrown vertically upward. Its velocity at the highest point is:

A. Zero ✓

B. 10 m s^{-1}

C. Maximum

D. None

67. A train moving at 36 km h^{-1} , its speed in m s^{-1} is:

A. 10 m s^{-1} ✓

B. 20 m s^{-1}

C. 25 m s^{-1}

D. 30 m s^{-1}

68. If a cyclist has an acceleration of 2 m/s^2 for 5 seconds, the change in velocity is:

A. 5 m/s

B. 10 m/s ✓

C. 15 m/s

D. 20 m/s

69. A sprinter completes 100m race in 12s, average speed is:

A. 12 m s^{-1}

B. 8.33 m s^{-1} ✓

C. 8 m s^{-1}

D. 100 m s^{-1}

70. In SI, unit of speed is:

A. m s^{-1} ✓

B. m s^{-2}

C. km h^{-1}

D. m

71. Which fish is fastest?

A. Sailfish ✓

B. Tuna

C. Starfish

D. Dolphin

72. The time rate of change of velocity is called:

A. Acceleration ✓

B. Speed

C. Displacement

D. Torque

73. First equation of motion is:

A. $v_f = v_i + at$ ✓

B. $S = vt$

C. $2aS = v_f^2 - v_i^2$

D. $v_f^2 - v_i^2 = 2aS$

74. Acceleration of a body is negative if velocity:

A. Increases

B. Decreases ✓

C. Remains constant

D. Becomes zero

75. If velocity of a body is uniform, then acceleration is:

A. Positive

B. Negative

C. Zero ✓

D. Constant

76. If velocity changes at a constant rate, acceleration is:

A. Uniform ✓

B. Variable

C. Zero

D. Negative

77. An acceleration of 1.5 m s^{-2} expressed in km h^{-2} is:

A. 324

B. 19440 ✓

C. 5400

D. 414

78. Area under speed-time graph represents:**A. Distance covered ✓**

B. Acceleration

C. Velocity

D. Time

79. Slope of speed-time graph shows:**A. Acceleration ✓**

B. Distance

C. Speed

D. Displacement

80. 3rd equation of motion is:A. $v_f = v_i + at$ B. $S = v_i t + \frac{1}{2}at^2$ **C. $2aS = v_f^2 - v_i^2$ ✓**D. $F = ma$ **81. The correct equation of motion is:**A. $v_f^2 + v_i^2 = 2aS$ B. $v_f - v_i = at$ **C. $2aS = v_f^2 - v_i^2$ ✓**D. $v_f + v_i = at$ **82. Value of gravitational acceleration (g) is approx:****A. 10 m s^{-2} ✓**B. 9.8 m s^{-2} C. 1.6 m s^{-2}

D. 0

83. Speed of light is:**A. $3 \times 10^8 \text{ m s}^{-1}$ ✓**B. $2 \times 10^8 \text{ m s}^{-1}$ C. $3 \times 10^5 \text{ m s}^{-1}$ D. $3 \times 10^9 \text{ m s}^{-1}$ **84. Acceleration of freely falling object is:****A. 10 m s^{-2} ✓**B. 9.8 m s^{-2}

C. 0

D. 1.6 m s^{-2} **85. Einstein proposed Special Theory of Relativity in:**

A. 1605

- B. 1705
- C. 1805
- D. 1905 ✓**

86. Which of the following is a non-contact force?

- A. Friction
- B. Air resistance
- C. Magnetic force ✓**
- D. Tension

87. Which of the following is a contact force?

- A. Friction ✓**
- B. Magnetic
- C. Electrostatic
- D. Gravitational

88. How many major types of forces are there?

- A. Two (Contact/Non-contact) ✓**
- B. Three
- C. Four
- D. Five

89. Which is a contact force?

- A. Electrostatic
- B. Gravitational
- C. Tension ✓**
- D. Magnetic

90. SI unit of Gravitational constant G is:

- A. N m kg^{-2}
- B. $\text{N m}^2 \text{kg}^{-2}$ ✓**
- C. N m^{-1}
- D. N kg^{-1}

91. Value of Gravitational constant G is:

- A. 6.67×10^{-11} ✓**
- B. 6.67×10^{-9}
- C. 6.67×10^{-13}
- D. 6.67×10^{-15}

92. According to Law of Gravitation, Force F is:

- A. $G \frac{m_1 m_2}{d^2}$ ✓**
- B. $G \frac{m_1 m_2}{d}$
- C. $G \frac{m_1 m_2}{d^3}$
- D. $m_1 m_2$

93. Concept of gravity was first put up by:

- A. Newton ✓**
- B. Galileo
- C. Hooke
- D. Einstein

94. Getting hurt when kicking a stone is due to:

- A. Inertia
- B. Velocity
- C. Momentum
- D. Reaction ✓**

95. An object continues motion with constant velocity until:

- A. Net force acts on it ✓**
- B. Weight acts
- C. Friction acts
- D. Air resistance acts

96. Conservation of linear momentum is equivalent to:

- A. Newton's 1st law
- B. Newton's 2nd law
- C. Newton's 3rd law ✓**
- D. None

97. Newton's first law is also known as:

- A. Law of momentum
- B. Law of inertia ✓**
- C. Law of gravity
- D. Law of force

98. Correct form of Newton's second law is:

- A. $F = ma$ ✓**
- B. $F = mv$
- C. $F = m/a$
- D. $F = m a^2$

99. 1 Newton is equal to:

- A. 1 kg m s^{-2} ✓**
- B. $1 \text{ kg m}^2 \text{ s}^{-2}$
- C. 1 kg m s^{-1}
- D. 1 kg s^{-2}

100. Force on 10 kg body with 2 m s^{-2} acceleration is:

- A. 5 N
- B. 20 N ✓**
- C. 10 N

D. 30 N

101. Force acting for 2s producing 50 kg m/s momentum change is:

A. 25 N ✓

B. 50 N

C. 100 N

D. 2 N

102. Law of inertia is:

A. First law of motion ✓

B. Second law

C. Third law

D. Law of gravitation

103. Famous book of Isaac Newton is:

A. Principia Mathematica ✓

B. Principia Physics

C. Principia Chemistry

D. Principia Science

104. Isaac Newton was born in:

A. 1643 ✓

B. 1642

C. 1743

D. 1843

105. Formula for Newton's 2nd Law:

A. $F = ma$ ✓

B. $F = m/a$

C. $F = a/m$

D. $F = m a^2$

106. Product of mass and acceleration is:

A. Force ✓

B. Momentum

C. Inertia

D. Torque

107. 20 N force produces 2.5 m s^{-2} acc. Mass is:

A. 8 kg ✓

B. 10 kg

C. 50 kg

D. 0.25 kg

108. Weight 'w' is equal to:

A. mg ✓

- B. m/g
- C. g/m
- D. 1/mg

109. One Newton is:

- A. kg m s^{-2} ✓**
- B. kg m s^{-1}
- C. $\text{kg m}^2 \text{s}^{-2}$
- D. g m s^{-2}

110. SI unit of Force is:

- A. Joule
- B. Newton ✓**
- C. Pascal
- D. Ampere

111. Rocket works on:

- A. 1st Law
- B. 2nd Law
- C. 3rd Law ✓**
- D. Law of Gravitation

112. Mass 20 kg pulled upward, weight is approx:

- A. 200 N ✓**
- B. 100 N
- C. 150 N
- D. 20 N

113. SI unit of mass is:

- A. Kilogram ✓**
- B. Gram
- C. Pound
- D. Newton

114. Mass 40 kg, Weight on earth is:

- A. 400 N ✓**
- B. 40 N
- C. 4000 N
- D. 4 N

115. SI unit of weight is:

- A. Newton ✓**
- B. Kilogram
- C. Pascal
- D. Joule

116. Gravitational field strength is:

A. 10 N kg^{-1} ✓

B. 9.8 m s^{-1}

C. 10 kg^{-1}

D. 9.8 N

117. Weight is 147 N, Mass is ($g = 10 \text{ m s}^{-2}$):

A. 14.7 kg ✓

B. 1.47 kg

C. 147 kg

D. 0.147 kg

118. Lubricant between surfaces:

A. Increases friction

B. Reduces friction ✓

C. Increases temp

D. Increases wear

119. Highly desirable when climbing a hill:

A. Friction ✓

B. Speed

C. Velocity

D. Power

120. How many categories of sliding friction?

A. One

B. Two (Static/Kinetic) ✓

C. Three

D. Four

121. Material lowering friction:

A. Water

B. Oil/Grease ✓

C. Sand

D. Wood

122. Momentum depends on:

A. Mass

B. Velocity

C. Both A and B ✓

D. Acceleration

123. Change in momentum is called:

A. Impulse ✓

B. Force

C. Torque

D. Acceleration

124. SI unit of momentum is:

A. Ns or kg m s^{-1} ✓

B. Nm

C. kg m s^{-2}

D. N s^{-1}

125. Change in momentum is equal to:

A. Force x Time (Impulse) ✓

B. Mass x Time

C. Force x Velocity

D. Mass x Force

126. Net force on a book (5kg) lying on a table is:

A. 0 N ✓

B. 5 N

C. 50 N

D. 10 N

127. Equation of momentum is:

A. $P = mv$ ✓

B. $P = m/v$

C. $P = mv^2$

D. $P = ma$

128. Rate of change of momentum is equal to:

A. Force ✓

B. Impulse

C. Torque

D. Velocity

129. SI unit of Impulse is:

A. Ns ✓

B. Nm

C. N/s

D. kg m s^{-2}

130. Rate of change of momentum of free falling body equals:

A. Weight/Force ✓

B. Mass

C. Velocity

D. Inertia

131. Particle mass m , velocity v collides with same mass at rest. Vel of 1st after collision:

A. 0 ✓

- B. v
- C. $v/2$
- D. $2v$

132. Law of conservation of momentum applies to:

- A. Isolated system ✓**
- B. Open system
- C. Single body
- D. Non-isolated

133. Momentum of isolated system after collision:

- A. Remains constant ✓**
- B. Increases
- C. Decreases
- D. Becomes zero

134. Principle of conservation of momentum applicable on:

- A. All objects ✓**
- B. Only micro
- C. Only macro
- D. None

135. Forces acting parallel to each other are:

- A. Parallel forces ✓**
- B. Perpendicular forces
- C. Concurrent
- D. None

136. Particle acted by 3N and 4N (perp). Net force is:

- A. 5 N ✓**
- B. 7 N
- C. 1 N
- D. 12 N

137. Forces can be added by:

- A. Head-to-tail rule ✓**
- B. Left hand rule
- C. Right hand rule
- D. Arithmetic

138. Moment of force is called:

- A. Torque ✓**
- B. Momentum
- C. Couple
- D. Work

139. Steering wheel of vehicle is example of:

A. Couple ✓

B. Torque

C. Force

D. Momentum

140. Torque formula:

A. $\tau = F \times l$ ✓

B. $\tau = F/l$

C. $\tau = l/F$

D. $\tau = F \times F$

141. Turning effect of force is:

A. Torque ✓

B. Force

C. Momentum

D. Work

142. SI unit of torque is:

A. Nm ✓

B. Ns

C. N m^{-1}

D. N s^{-2}

143. Steering wheel produces:

A. Couple ✓

B. Linear force

C. Momentum

D. Energy

144. Force F at angle 60° with x-axis. Y-component is:

A. $F \sin 60^\circ$ ✓

B. $F \cos 60^\circ$

C. $F \tan 60^\circ$

D. F

145. Value of $\sin 90^\circ$ is:

A. 1 ✓

B. 0

C. 0.5

D. 0.866

146. $\tan 45^\circ$ is equal to:

A. 1 ✓

B. 0

C. 0.5

D. Infinity

147. F_y/F_x is equal to:

A. $\tan \theta$ ✓

B. $\sin \theta$

C. $\cos \theta$

D. $\cot \theta$

148. Value of $\sin 60^\circ$ is:

A. 0.866 ✓

B. 0.5

C. 0.707

D. 1

149. Trigonometry is a branch of:

A. Mathematics ✓

B. Physics

C. Chemistry

D. Biology

150. Resultant of two forces F_1 , F_2 at 90° is:

A. $\sqrt{F_1^2 + F_2^2}$ ✓

B. $F_1 + F_2$

C. $F_1^2 + F_2^2$

D. $(F_1 + F_2)^2$

151. If force F makes an angle θ with y-axis, then its y-component will be:

A. $F \sin \theta$

B. $F \cos \theta$ ✓

C. $F \tan \theta$

D. F

152. Direction of force can be determined by:

A. $\cos \theta = F_x/F_y$

B. $\sin \theta = F_y/F_x$

C. $\tan \theta = F_y/F_x$ ✓

D. $\tan \theta = F_x/F_y$

153. A body is said to be in equilibrium if it has no:

A. Velocity

B. Acceleration ✓

C. Speed

D. Torque

154. A body in equilibrium must not have:

A. Velocity

- B. Momentum
- C. Quantity of motion
- D. Acceleration ✓**

155. How many types of equilibrium are there?

- A. One
- B. Two
- C. Three ✓**
- D. Four

156. A paratrooper coming down with terminal velocity is in:

- A. Static equilibrium
- B. Dynamic equilibrium ✓**
- C. Unstable equilibrium
- D. Neutral equilibrium

157. An electric bulb hanging from the ceiling is an example of:

- A. Dynamic equilibrium
- B. Static equilibrium ✓**
- C. Unstable equilibrium
- D. Neutral equilibrium

158. The vector sum of all torques acting on a body about any point must be:

- A. Zero ✓**
- B. Equal
- C. Maximum
- D. Minimum

159. The conditions of equilibrium are:

- A. 1
- B. 2 ✓**
- C. 3
- D. 4

160. The mathematical form of the second condition of equilibrium is:

- A. $\Sigma F = 0$
- B. $\Sigma \tau = 0$ ✓**
- C. $\Sigma P = 0$
- D. $\Sigma W = 0$

161. According to the first condition of equilibrium:

- A. $\Sigma F = 0$ ✓**
- B. $\Sigma \tau = 0$
- C. $\Sigma U = 0$
- D. $\Sigma N = 0$

162. In stable equilibrium, the centre of gravity of the body lies:

A. At the lowest position ✓

B. At the highest position

C. At any position

D. Outside the body

163. A cylinder resting on its circular base is in:

A. Stable equilibrium ✓

B. Unstable equilibrium

C. Neutral equilibrium

D. None

164. Centripetal force is given by:

A. mr

B. mr^2

C. mv^2

D. mv^2/r ✓

165. The gravitational pull of the earth provides:

A. Centrifugal force

B. Gravitational force

C. Centripetal force ✓

D. Equilibrium

166. Which force rotates the body in a circle?

A. Magnetic force

B. Gravitational force

C. Centripetal force ✓

D. Centrifugal force

167. The centripetal acceleration is inversely proportional to:

A. Velocity

B. Mass

C. Radius ✓

D. Mass and Radius

168. Centripetal force performs:

A. Maximum work

B. Minimum work

C. Negative work

D. No work ✓

169. Work done is maximum when the angle between force F and displacement d is:

A. 0° ✓

B. 30°

C. 60°

D. 90°

170. The product of force and displacement is:

- A. Energy
- B. Work ✓**
- C. Power
- D. Both A and B

171. The SI unit of work is:

- A. Newton
- B. Joule ✓**
- C. Pascal
- D. Both A and B

172. A 65 N force is pulling the suitcase for a distance of 20 meters, find work:

- A. 1300 J ✓**
- B. 45 N
- C. 8 J
- D. 1125.8 J

173. The ability of a body to do work is called:

- A. Energy ✓**
- B. Force
- C. Displacement
- D. None

174. 1 MJ (Mega Joule) is equal to:

- A. 10^3 J
- B. 10^6 J ✓**
- C. Both A and B
- D. None

175. One kilo Joule is equal to:

- A. 10 J
- B. 100 J
- C. 1000 J ✓**
- D. 10000 J

176. One mega Joule is equal to:

- A. 10^3 J
- B. 10^6 J ✓**
- C. 10^9 J
- D. 10^{-3} J

177. No work is done when θ is:

- A. 360°

B. 180°

C. 90° ✓

D. 0°

178. A bullet of mass 0.05 kg has a speed of 300 m s^{-1} . Its kinetic energy is:

A. 2250 J ✓

B. 4500 J

C. 1500 J

D. 1125 J

179. If a car doubles its speed, its kinetic energy will be:

A. The same

B. Doubled

C. Increased to three times

D. Increased to four times ✓

180. If the momentum of an object is doubled, its kinetic energy will:

A. Double

B. Increase to four times ✓

C. Remain the same

D. Reduce to one-half

181. The combination of kinetic energy and potential energy is:

A. Mechanical energy ✓

B. Electrical energy

C. Nuclear energy

D. Geothermal energy

182. Work done in a single beat of the human heart is approximately:

A. 1.5 J ✓

B. 0.5 J

C. 0.08 J

D. None

183. A ball weighing 50 N is lifted to a height of 5 m. Potential energy stored is:

A. 250 J ✓

B. 25 J

C. 45 J

D. 55 J

184. Work is a quantity:

A. Vector

B. Constant

C. Scalar ✓

D. All of above

185. Capability to do work is called:

- A. Energy ✓**
- B. Power
- C. Torque
- D. Momentum

186. If the velocity of a body becomes three times greater, then Kinetic Energy becomes:

- A. Three times
- B. Nine times ✓**
- C. Four times
- D. Six times

187. The formula of kinetic energy is:

- A. mv^2/r
- B. mgh
- C. $\frac{1}{2}mv^2$ ✓**
- D. mv

188. A body of mass 2 kg is 1 m high. Its potential energy is ($g = 10 \text{ m s}^{-2}$):

- A. 50 J
- B. 20 J ✓**
- C. 400 J
- D. 2.40 J

189. Potential energy (P.E.) = ?

- A. $\frac{1}{2}mv^2$
- B. mv^2
- C. m^2gh
- D. mgh ✓**

190. The energy in a stretched bow is:

- A. Elastic potential energy ✓**
- B. Kinetic energy
- C. Heat energy
- D. Sound energy

191. The work done by a single beat of human heart is approx:

- A. 0.5 J
- B. 1.5 J ✓**
- C. 2.0 J
- D. 2.5 J

192. The energy output of a power station in one year is:

- A. 10^8 J
- B. 10^{12} J
- C. 10^{16} J (approx) ✓**

D. 10^{18} J

193. Work done in lifting a box to the second floor converts to:

- A. Kinetic energy
- B. Potential energy ✓**
- C. Heat energy
- D. Sound energy

194. Which of the following is not a renewable energy source?

- A. Hydroelectric energy
- B. Fossil fuels ✓**
- C. Wind energy
- D. Solar energy

195. Which one is a renewable source of energy?

- A. Coal
- B. Natural gas
- C. Sunlight ✓**
- D. Uranium

196. Which one is a cheaper source of energy?

- A. Nuclear energy
- B. Solar energy / Hydro ✓**
- C. Wind energy
- D. Tidal energy

197. How much time is required to form new non-renewable energy sources?

- A. 50 years
- B. 500 years
- C. 750 years
- D. Millions of years ✓**

198. The SI unit of power is:

- A. Joule
- B. Newton
- C. Watt ✓**
- D. Second

199. The rate of doing work is called:

- A. Work
- B. Force
- C. Newton
- D. Power ✓**

200. What is the power utilized when 100 J of work is done in 5 s?

- A. 10 W

B. 20 W ✓

C. 105 W

D. 500 W

201. The SI unit of power is:

A. Joule

B. Watt ✓

C. Newton

D. Erg

202. Power of an electric fan in watts is approx:

A. 40

B. 80 (to 100) ✓

C. 100

D. 200

203. What is the power of an air conditioner approx?

A. 1000 W

B. 1200 W

C. 2500 W (depends on ton) ✓

D. 3000 W

204. One watt is equal to:

A. 1 Js

B. 1 J s^{-1} ✓

C. 1 J s^{-2}

D. $1 \text{ J}^{-1} \text{ s}^2$

205. Consumption of energy by a 60-watt bulb in 2 seconds is:

A. 120 J ✓

B. 60 J

C. 30 J

D. 0.5 J

206. James Watt was a _____ engineer.

A. Scottish ✓

B. French

C. English

D. Latin

207. The average efficiency of a diesel engine is:

A. 15%

B. 35-40% ✓

C. 35%

D. None

208. Efficiency of an ideal system is:

- A. 100% ✓**
- B. 90%
- C. 80%
- D. 50%

209. If the diameter of a wire is reduced to half, extension under same load becomes:

- A. One half
- B. Double
- C. One fourth
- D. Four times ✓**

210. Materials are elastic up to a certain limit known as:

- A. Deforming force
- B. Extension
- C. Elastic limit ✓**
- D. None

211. The most elastic material among the following is:

- A. Rubber
- B. Wood
- C. Steel (Solid) ✓**
- D. Glass

212. Plasticine is a _____ material.

- A. Elastic
- B. Inelastic ✓**
- C. Solid
- D. Deformable

213. When a spring is compressed, what form of energy does it possess?

- A. Kinetic
- B. Potential (Elastic) ✓**
- C. Internal
- D. Heat

214. Which graph measures spring constant k?

- A. Gradient
- B. Slope of force-extension ✓**
- C. Both A and B
- D. None

215. Device used to measure weight using spring extension is:

- A. Barometer
- B. Spring balance (scales) ✓**
- C. Galvanometer

D. None

216. Which device is used for current detecting?

- A. Barometer
- B. Voltmeter
- C. Galvanometer ✓**
- D. Spring scales

217. Galvanometer makes use of a tiny spring called:

- A. Spring
- B. Pen spring
- C. Spiral spring
- D. Hair spring ✓**

218. SI unit of spring constant is:

- A. N m^{-1} ✓**
- B. N m^{-2}
- C. Nm
- D. N m^2

219. "k" (spring constant) is equal to:

- A. F/x ✓**
- B. x/F
- C. F
- D. $1/kx$

220. Formula of Hooke's law is:

- A. $F = kx$ ✓**
- B. $k = F/x$
- C. $x = F/k$
- D. $F = 1/kx$

221. Galvanometer is a _____ detecting device.

- A. Current ✓**
- B. Charge
- C. Potential
- D. Resistance

222. A tiny spring used in a galvanometer is called:

- A. Helical spring
- B. Spiral spring
- C. Balancing spring
- D. Hair spring ✓**

223. Which of the following substances has low density?

- A. Air / Polythene (Packing foam) ✓**

- B. Petrol
- C. Water
- D. Both A and C

224. Density of air is approx:

- A. 1.2 kg m^{-3}
- B. 1.3 kg m^{-3} ✓**
- C. 1.4 kg m^{-3}
- D. 1.5 kg m^{-3}

225. Density of water is:

- A. 100 kg m^{-3}
- B. 1000 kg m^{-3} ✓**
- C. 100 kg m^3
- D. 1000 kg m^3

226. The density of aluminum is:

- A. 1700 kg m^{-3}
- B. 2700 kg m^{-3} ✓**
- C. 700 kg m^3
- D. 3700 kg m^{-3}

227. Density of steel is:

- A. 7800 kg m^{-3} ✓**
- B. 2700 kg m^{-3}
- C. 7800 kg m^{-3}
- D. 8700 kg m^{-3}

228. Density of gold is:

- A. 19300 kg m^{-3} ✓**
- B. 11400 kg m^{-3}
- C. 19300 kg m^{-3}
- D. 22600 kg m^{-3}

229. Ratio of pressure on two plates of area 2 and 3 m^2 at same depth is:

- A. 1:1 (Pressure depends on depth) ✓**
- B. $\sqrt{2}:\sqrt{3}$
- C. 2:3
- D. 4:9

230. The SI unit of pressure is:

- A. Kg
- B. N
- C. N m^{-2} (Pascal) ✓**
- D. N m^{-1}

231. Force exerted perpendicularly on unit area is called:

- A. Density
- B. Pressure ✓**
- C. Elasticity
- D. Force

232. One Pascal is equal to:

- A. 1 N m^{-1}
- B. 1 N m^{-2} ✓**
- C. 1 Nm
- D. 1 N m^2

233. If area of contact between feet and ground is reduced, pressure:

- A. Remains same
- B. Decreases
- C. Increases ✓**
- D. Becomes double

234. Pressure of liquids in a container increases with:

- A. Base
- B. Volume
- C. Depth ✓**
- D. Mass

235. Liquid pressure "P" at depth "h" is calculated by:

- A. $P = \rho gh$ ✓**
- B. $P = \rho g$
- C. $P = gh$
- D. $P = \rho h$

236. The upthrust of liquid is given by:

- A. gh
- B. ρgh
- C. ρgV ✓**
- D. ρgF

237. Force exerted by atmosphere on a rectangular surface $50\text{cm} \times 40\text{cm}$ (Atmo Pressure = 100kPa):

- A. 20 kN ✓**
- B. 100 kN
- C. 200 kN
- D. 500 kN

238. Atmospheric pressure extends up to a height of about:

- A. 100 km
- B. 1000 km

C. 500 km

D. Several hundred km (None) ✓

239. Atmospheric pressure can be measured by:

A. Galvanometer

B. Voltmeter

C. Barometer ✓

D. Thermometer

240. Atmospheric pressure depends upon the density of:

A. Water

B. Mercury

C. Air ✓

D. Sand

241. The principle of a hydraulic press is based on:

A. Hooke's law

B. Pascal's law ✓

C. Archimedes' principle

D. Conservation of energy

242. What is the pressure at the Sun's center?

A. 2×10^{16} Pa ✓

B. 2×10^{11} Pa

C. 2×10^{15} Pa

D. 2×10^{13} Pa

243. Pressure at Earth's center is:

A. 2×10^{11} Pa (approx) ✓

B. 2×10^{14} Pa

C. 2×10^{12} Pa

D. 2×10^{11} Pa

244. Normal Blood pressure is (approx range):

A. 1.6×10^4 Pa (120 mmHg) ✓

B. 1.6×10^{-4} Pa

C. 16×10^4 Pa

D. 16×10^{-4} Pa

245. Pressure on Mars is:

A. 7×10^2 Pa ✓

B. 7×10^2 Pa

C. 70×10^{-2} Pa

D. 70×10^2 Pa

246. Temperature of a substance is:

- A. Total heat
- B. Total number of molecules
- C. Degree of hotness or coldness ✓**
- D. Intermolecular distance

247. Heat is the:

- A. Energy in transit ✓**
- B. Total kinetic energy
- C. Internal energy
- D. Work done

248. Internal energy of air in a hot-air balloon increases as temperature:

- A. Decreases
- B. Low
- C. Increases ✓**
- D. High

249. Unit of heat is:

- A. Kelvin
- B. Metre per second
- C. Joule ✓**
- D. Joule per second

250. Intensity of an object's heat or cold is:

- A. Heat
- B. Thermal energy
- C. Temperature ✓**
- D. Kinetic energy

251. In Kelvin scale, temperature corresponding to melting point of ice is:

- A. 0 K
- B. 273 K ✓**
- C. 32 K
- D. 373 K

252. Temperature which has same value on Celsius and Fahrenheit scale is:

- A. -40° ✓**
- B. $+40^{\circ}$
- C. $+45^{\circ}$
- D. -45°

253. One disadvantage of alcohol in thermometer is:

- A. Low boiling point (wets glass) ✓**
- B. Low freezing point
- C. Expansion is linear
- D. High expansion

254. Thermometer boiling point is:

- A. High
- B. Good
- C. Weak
- D. Fixed Point ✓**

255. Thermometer bulb at one end is filled with:

- A. Mercury / Alcohol ✓**
- B. Copper
- C. Silver
- D. Zinc

256. In Celsius scale, interval between fixed points is divided into 100 parts, each called:

- A. Degree ($^{\circ}\text{C}$) ✓**
- B. Kelvin
- C. Fahrenheit
- D. None

257. In Fahrenheit scale, lower fixed point is labeled as:

- A. 0
- B. 32 ✓**
- C. 212
- D. 273

258. Which temperature scale is used in scientific measurement?

- A. Celsius
- B. Kelvin ✓**
- C. Fahrenheit
- D. None

259. Normal temperature of human body is:

- A. 98.6 K
- B. 273 K
- C. 37 $^{\circ}\text{C}$ (310 K) ✓**
- D. 98.6 $^{\circ}\text{C}$

260. Which one is not a magnetic material?

- A. Cobalt
- B. Iron
- C. Aluminum
- D. Nickel ✓**

261. Which is a magnetic material?

- A. Iron ✓**
- B. Nitrogen
- C. Oxygen

D. None

262. Which of the following is a non-magnetic material?

A. Brass

B. Copper (and Wood) ✓

C. Wood

D. All (context dependent)

263. How many poles does a magnet have?

A. One

B. Two ✓

C. Three

D. Four

264. Magnetism at the centre of a bar magnet is:

A. Minimum

B. Maximum

C. Negative

D. Zero ✓

265. Which material can exhibit induced magnetism?

A. Iron ✓

B. Copper

C. Wood

D. Plastic

266. Main cause of induced magnetism is:

A. Temperature change

B. Electric change

C. Pressure change

D. External magnetic field ✓

267. Which material can be made a magnet?

A. Iron ✓

B. Copper

C. Both A and B

D. None

268. Which material is commonly used to make permanent magnets?

A. Copper

B. Alnico / Neodymium ✓

C. Aluminum

D. Iron (Soft)

269. Example of a temporary magnet is:

A. Iron nail / Soft Iron ✓

- B. Neodymium
- C. Copper wire
- D. Iron

270. Example of permanent magnetic material is:

- A. Cobalt
- B. Alnico
- C. Ferrite
- D. All of these ✓**

271. Magnetic lines of force:

- A. Always straight
- B. Cross one another
- C. Enter into South, Leave North ✓**
- D. Enter into North

272. Unit of magnetic field strength is:

- A. Tesla ✓**
- B. Volt
- C. Ampere
- D. None

273. Which can be used to visualize magnetic field lines?

- A. Iron filings
- B. Compass needle
- C. Magnetic tape
- D. All of above ✓**

274. Magnetic lines of force are directed outside magnet from:

- A. South to North
- B. North to South ✓**
- C. East to West
- D. West to East

275. Permanent magnets are used in:

- A. Refrigerators
- B. Air conditioners
- C. Electric fans
- D. Magnetic hooks / Speakers ✓**

276. Permanent magnets are used in:

- A. Speakers
- B. Electric guitars
- C. Microphones
- D. All of above ✓**

277. Reverse process of electric generator is:

- A. Loudspeaker
- B. DC generator
- C. Electric motor ✓**
- D. Circuit breaker

278. Core of an electromagnet is made of:

- A. Soft iron ✓**
- B. Cobalt
- C. Copper
- D. Steel

279. Huge electromagnets are used in:

- A. Circuit breaker
- B. Magnetic relay
- C. Cranes ✓**
- D. Telephone receiver

280. Speed of a bullet train is approx:

- A. 400 km/h
- B. 500 - 600 km/h ✓**
- C. 200 km/h
- D. 100 km/h

281. A common method to magnetize a material is:

- A. Stroking / Electrical ✓**
- B. Hitting
- C. Heating
- D. None

282. Which can cause demagnetization?

- A. Heat
- B. Vibration / Hammering
- C. AC current field
- D. All of above ✓**

283. Steel bar can be stroked in:

- A. One way / Two ways ✓**
- B. Three ways
- C. Four ways
- D. None

284. Physics is a branch of:

- A. Social science
- B. Life science
- C. Physical science ✓**

285. Which branch of science plays a vital role in technology?

- A. Biology
- B. Chemistry
- C. Geology
- D. Physics ✓**

286. Which is considered the fourth dimension?

- A. Speed
- B. Distance
- C. Time ✓**
- D. Displacement

287. Branch of physics dealing with particles like neutrons/protons is:

- A. Solid state
- B. Plasma
- C. Electricity
- D. Nuclear physics ✓**

288. Study of large structure and evolution of universe is:

- A. Solid state
- B. Astronomy / Cosmology ✓**
- C. Nuclear physics
- D. Plasma physics

289. Integrated field combining physics, biology, chemistry is:

- A. Biophysics ✓**
- B. Cosmology
- C. Medical physics
- D. Astrophysics

290. Medical physics is applied in:

- A. Radiation therapy ✓**
- B. Astronomy
- C. Chemical analysis
- D. Environmental analysis

291. Ultimate truth of scientific method is:

- A. Hypothesis
- B. Experimentation ✓**
- C. Theory
- D. Law

292. A hypothesis:

- A. Is possible answer

B. May or may not be testable/true ✓

C. Supported by evidence

D. All of these

293. A graph of organized data is example of:

A. Collecting data

B. Asking question

C. Analyzing data ✓

D. Experimenting

294. Statement that can be tested/disproven is:

A. Theory

B. Assumption

C. Hypothesis ✓

D. Prediction

295. Logical conclusions of observations are called:

A. Experience

B. Assumption

C. Theory

D. Result / Deduction ✓

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