UNITS AND DIMENSIONS

SET 2

Q51. Which of the following is not a base quantity in SI?
 a) Luminous intensity
 b) Thermodynamic temperature
 c) Electric current
 d) Velocity
 Ans: d) Velocity

Q52. SI unit of power is:
 a) Watt
 b) Joule
 c) Newton
 d) Erg
 Ans: a) Watt

Q53. SI unit of energy density is same as that of:
 a) Pressure
 b) Force
 c) Torque
 d) Work
 Ans: a) Pressure

Q54. A system of units where G = 1, c = 1 is known as:
 a) SI system
 b) Natural system
 c) MKS system
 d) FPS system
 Ans: b) Natural system

Q55. Which of the following pairs have the same dimensions?
 a) Stress and pressure
 b) Torque and work
 c) Angular momentum and Planck's constant
 d) All of these
 Ans: d) All of these

Q56. Which of the following quantities is not dimensionless?
 a) Strain
 b) Angle
 c) Relative density
 d) Acceleration
 Ans: d) Acceleration

Q57. Which unit is not a derived SI unit?
a) Pascal
b) Watt
c) Joule
d) Kelvin
Ans: d) Kelvin

Q58. Which of the following is dimensionally incorrect?
a) Work = Force × displacement
b) Energy = Power × time
c) Pressure = Force/Area
d) Torque = Force/Distance
Ans: d) Torque = Force/Distance

Q59. The dimension of angular velocity is:
a) $[T^{-1}]$
b) $[T]$
c) $[LT^{-1}]$
d) $[MLT^{-2}]$
Ans: a) $[T^{-1}]$

Q60. The dimensional formula of impulse is same as:
a) Momentum
b) Force
c) Power
d) Pressure
Ans: a) Momentum

Q61. Which is the correct dimensional formula of pressure?
a) $[ML^{-1}T^{-2}]$
b) $[MLT^{-2}]$
c) $[ML^{2}T^{-2}]$
d) $[M^{0}L^{-1}T^{-2}]$
Ans: a) $[ML^{-1}T^{-2}]$

Q62. Which has different dimensions?
a) Potential energy
b) Kinetic energy
c) Work
d) Momentum
Ans: d) Momentum

Q63. The dimensional formula of universal gas constant R is:
a) $[ML^{2}T^{-2}K^{-1}mol^{-1}]$
b) $[ML^{2}T^{-2}]$
c) $[M^{0}L^{2}T^{-2}]$
d) $[ML^{2}T^{-2}K^{-1}]$
Ans: a) $[ML^{2}T^{-2}K^{-1}mol^{-1}]$

Q64. Which of the following is not a fundamental SI unit?
a) Ampere
b) Kilogram
c) Newton
d) Mole
Ans: c) Newton

Q65. Which of the following is a coherent system of units?
a) CGS
b) FPS
c) SI
d) Both a & c
Ans: c) SI

Significant Figures & Rounding (Q.66 – Q.75)

Q66. 2.500 has how many significant figures?
a) 2
b) 3
c) 4
d) 5
Ans: c) 4

Q67. 0.000450 has how many significant figures?
a) 2
b) 3
c) 4
d) 5
Ans: b) 3

Q68. 7.0320 has how many significant figures?
a) 3
b) 4
c) 5
d) 6
Ans: c) 5

Q69. Which of the following has 2 significant figures?
a) 0.0070
b) 0.070
c) 7.0×10^{-3}
d) All of these
Ans: d) All of these

Q70. 0.0006 has how many significant figures?
a) 1
b) 2
c) 3
d) 4
Ans: a) 1

Q71. 6.022×10^{23} has:
 a) 2 significant figures
 b) 3 significant figures
 c) 4 significant figures
 d) infinite
 Ans: c) 4

Q72. 1.732 rounded to 2 significant figures is:
 a) 1.7
 b) 1.8
 c) 1.73
 d) 1.74
 Ans: a) 1.7

Q73. 2.735 rounded to 3 significant figures becomes:
 a) 2.73
 b) 2.74
 c) 2.75
 d) 2.70
 Ans: b) 2.74

Q74. 2.745 rounded to 3 significant figures becomes:
 a) 2.74
 b) 2.75
 c) 2.70
 d) 2.73
 Ans: a) 2.74

Q75. 1.499×10^3 rounded to 2 significant figures is:
 a) 1.5×10^3
 b) 1.49×10^3
 c) 1.4×10^3
 d) 1.50×10^3
 Ans: a) 1.5×10^3

Q76. 1 erg = ? J
 a) 10^{-3}
 b) 10^{-5}
 c) 10^{-7}
 d) 10^{-9}
 Ans: c) 10^{-7}

Q77. 1 eV = ? J
 a) 1.6×10^{-16}
 b) 1.6×10^{-19}
 c) 1.6×10^{-23}
 d) 1.6×10^{-20}
 Ans: b) 1.6×10^{-19}

Q78. 1 cal = ? J
 a) 4.2×10^{-1}
 b) 4.2
 c) 42
 d) 4200
 Ans: b) 4.2

Q79. 1 Å = ? cm
 a) 10^{-6}
 b) 10^{-7}
 c) 10^{-8}
 d) 10^{-10}
 Ans: c) 10^{-8}

Q80. The value of G in SI units is:
 a) $9.8 \ m/s^2$
 b) $6.67 \times 10^{-11} \ N \ m^2/kg^2$
 c) $3.00 \times 10^{8} \ m/s$
 d) $6.62 \times 10^{-34} \ J \ s$
 Ans: b) $6.67 \times 10^{-11} \ N \ m^2/kg^2$

Q81. The unit of Planck's constant is:
 a) J s
 b) N m
 c) kg m/s
 d) J/kg
 Ans: a) J s

Q82. 1 barn = ? m²
 a) 10^{-24}
 b) 10^{-28}
 c) 10^{-30}
 d) 10^{-22}
 Ans: b) 10^{-28}

Q83. Density of lead is 11.3 g/cm³. In SI units, it is:
 a) $1.13 \times 10^{3} \ kg/m^3$
 b) $11.3 \times 10^{3} \ kg/m^3$
 c) $1.13 \times 10^{4} \ kg/m^3$
 d) $113 \times 10^{3} \ kg/m^3$
 Ans: c) $1.13 \times 10^{4} \ kg/m^3$

Q84. 1 newton-metre = ? Joule
 a) 1
 b) 10
 c) 100
 d) 1000
 Ans: a) 1

Q85. 1 Pascal = ?
 a) N/m^2
 b) J/m^3
 c) Both a & b
 d) None
 Ans: c) Both a & b

Q86. Unit of coefficient of viscosity is:
 a) $N\ s\ m^{-2}$
 b) Pa s
 c) $kg\ m^{-1}s^{-1}$
 d) All of these
 Ans: d) All of these

Q87. Dimensional formula of surface tension is:
 a) $[MT^{-2}]$
 b) $[MLT^{-2}]$
 c) $[M^0L^{-1}T^0]$
 d) $[ML^{-1}T^{-2}]$
 Ans: d) $[ML^{-1}T^{-2}]$

Q88. Dimensional formula of viscosity coefficient η is:
 a) $[ML^{-1}T^{-2}]$
 b) $[ML^{-1}T^{-1}]$
 c) $[M^0LT^{-1}]$
 d) $[MLT^{-2}]$
 Ans: b) $[ML^{-1}T^{-1}]$

Q89. 1 fermi = ? m
 a) 10^{-12}
 b) 10^{-13}
 c) 10^{-15}
 d) 10^{-10}
 Ans: c) 10^{-15}

Q90. Which of these has the same unit as torque?
 a) Work
 b) Energy
 c) Force × distance
 d) All of these
 Ans: d) All of these

Q91. Which of the following equations is dimensionally correct?
 a) $s = ut + \frac{1}{2}at^2$
 b) $KE = \frac{1}{2}mv^2$
 c) $F = ma$
 d) All of these
 Ans: d) All of these

Q92. Which has dimensions of $[ML^2T^{-2}]$?
 a) Work
 b) Energy
 c) Torque
 d) All of these
 Ans: d) All of these

Q93. Which of the following is not dimensionally correct?
 a) Pressure = Force/Area
 b) Energy = Power × time
 c) Power = Work × time
 d) Momentum = Mass × velocity
 Ans: c) Power = Work × time

Q94. Which physical quantity has the dimension $[ML^2T^{-3}]$?
 a) Power
 b) Energy
 c) Torque
 d) Work
 Ans: a) Power

Q95. Which has dimensions $[M^0LT^{-2}]$?
 a) Acceleration
 b) Velocity
 c) Time
 d) Force
 Ans: a) Acceleration

Q96. Which of these equations cannot be verified by dimensional analysis?
 a) $v^2 = u^2 + 2as$
 b) $T = 2\pi\sqrt{(l/g)}$
 c) $F = ma$
 d) $KE = \frac{1}{2}mv^2$
 Ans: b) $T = 2\pi\sqrt{(l/g)}$

Q97. Which of these is not dimensionless?
 a) Refractive index
 b) Relative density
 c) Coefficient of friction
 d) Gravitational constant
 Ans: d) Gravitational constant

Q98. Which has dimensions $[ML^0T^{-2}]$?
 a) Pressure
 b) Stress
 c) Force
 d) Acceleration
 Ans: c) Force

Q99. Which of the following is not a correct pair?
 a) Stress → $[ML^{-1}T^{-2}]$
 b) Energy → $[ML^{2}T^{-2}]$
 c) Pressure → $[MLT^{-2}]$
 d) Momentum → $[MLT^{-1}]$
 Ans: c) Pressure → $[MLT^{-2}]$

Q100. Which quantity has dimension $[ML^{-3}]$?
 a) Density
 b) Pressure
 c) Energy
 d) Torque
 Ans: a) Density