1) The unit of the coefficient of viscosity in SI system is:
a) m/kg-s
b) m-s/kg^2
c) kg/m-s^2
d) kg/m-s

2) Joule x see is unit of
a) energy
b) momentum
c) angular momentum
d) Power

3) The unit of surface tension may be expressed as:
a) joule metre
b) Newton metre
c) Joule metre^{-2}
d) Newton metre^{-2}

4) The unit of Stefan-Boltzman's constant σ is :
a) $\frac{watt^4}{m\,x\,k^4}$
b) $\frac{calorie}{m^2\,x\,k^4}$
c) $\frac{watt}{m^2\,x\,k^4}$
d) $\frac{joule}{m^2\,x\,k^4}$

5) Unit of angular acceleration in SI system is
a) N Kg^{-1}
b) m sec^{-2}
c) rad sec^{-2}
d) km kg^{-1}

6) The equation $\left[p+\frac{a}{v^2}\right]$(V-b) = constant. The units of a are:
a) dyne x cm^5
b) dyne x cm^4
c) dyne/cm^3
d) dyne/cm^2

7) SI unit of radioactivity is :
a) Rutherford
b) Roentgen
c) Becquerel
d) Curie

8) The SI unit of moment of inertia si:
a) kg/m^2
b) $kg\text{-}m^2$
c) N/m^2
d) $N \times m^2$

9) The unit of Planck's constant h is same as that of:

a) Energy
b) work
c) linear momentum
d) angular momentum

10) Gauss is a unit of which of the following quantities?
a) H
b) B
c) ϕ
d) I

11) The dimensional representation of Planck's constant is identical to that of
a) torque
b) work
c) stress
d) angular momentum

12) The dimensions of force constant are:
a) $M^1L^1T^{-2}$
b) $M^1L^1T^{-1}$
c) ML^2T^{-2}
d) $ML^{-1}T^{-2}$

13) The van der Waals' equation of state for some gases can be expressed as $\left[p+\frac{a}{V^2}\right]$(V-b) = RT where P is the pressure. V the molar volume and T is the absolute temperature of the given sample of gas, a, b and R are constants. The dimensions of 'a' are:

a) ML^5T^{-2}
b) $ML^{-1}T^{-2}$
c) L^3
d) L^6

14) The dimensions of torque are:
a) ML^2T^{-2}
b) MLT^2
c) MLT^{-1}
d) MT^{-2}

15) The dimension of coefficient of viscosity is:
a) $ML^{-1}T^{-1}$
b) MLT^{-2}
c) $ML^{0}L^{-2}$
d) MLT^{-1}

16) The dimensional formula for impulse is :
a) MLT^{-1}
b) MLT^{2}
c) $ML^{2}T^{-2}$
d) $ML^{0}T^{-2}$

17) $[ML^{2}T^{-3}]$ represents the dimensions of:
a) Pressure
b) Energy
c) Power
d) Force

18) The frequency of vibration of a string is given by: $\gamma = \frac{p}{21}\left[\frac{F}{m}\right]^{-1/2}$ Here p is the number of segments in which the string is divided. F is the tension in the string and L is its length. The dimensional formula for m is :
a) $M^{0}L^{0}T^{0}$
b) $ML^{-1}T^{0}$
c) $ML^{0}T^{-1}$
d) $M^{0}LT^{-1}$

19) Which of the following have same dimensions?
a) Pressure and density
b) Gravitational potential and energy
c) Impulse and momentum
d) Stress and strain

20) The dimensions of Planck's constant are:
a) $ML^{2}T^{-1}$
b) $ML^{3}T^{-1}$
c) $ML^{-2}T^{-1}$
d) $M^{0}L^{-1}T^{-3}$

21) When C, R and L represent general identity, then dimensions. Of $C^{2}RL$ are:
a) $M^{0}L^{0}T^{3}A^{0}$
b) $ML^{2}T^{-3}A^{2}$
c) MLTA
d) None of these

22) If $V = \sqrt{\frac{\gamma p}{p}}$ then dimensions of γ are
a) $M^{0}L^{0}T^{0}$
b) $M^{0}L^{0}T^{-1}$
c) $M^{1}L^{0}T^{0}$
d) $M^{0}L^{1}T^{0}$

23) Which of the two have same dimensions?
a) Force and strain
b) Force and stress
c) Angular velocity and frequency
d) Energy and strain

24) Which of the following is a scalar quantity?
a) Work
b) Displacement
c) Velocity
d) Acceleration

25) If $\vec{A} x \vec{B} = \vec{B} x \vec{A}$, then the angle between $\vec{A}$ and $\vec{B}$ is:
a) π
b) $\pi/3$
c) $\pi/2$
d) $\pi/4$

26) If $(\vec{A} x \vec{B} | = \sqrt{3}(\vec{A}\ \vec{B})$, then the value of $|\ \vec{A} + \vec{B}|$ is:
a) $(A^2 + B^2 + AB)^{1/2}$
b) $\left[A^2 + B^2 + \frac{AB}{\sqrt{3}} \right]^{1/2}$
c) A +B
d) $(A^2 + B^2 + \sqrt{3}\,AB)^{1/2}$

27) The two vectors have magnitudes 3 and 5. if angle between them is 60^0. then the dot product of two vectors will be:
a) 7.5
b) 6.5
c) 8.4
d) 7.9

28) If vectors $\vec{P}, \vec{Q}$ and $\vec{R}$ have magnitude 5, 12 and 13 units and $\vec{P} + \vec{Q} = \vec{R}$ the angle between Q and R is:

a) $\cos^{-1} \frac{5}{12}$
b) $\cos^{-1} \frac{5}{13}$
c) $\cos^{-1} \frac{12}{13}$
d) $\cos^{-1} \frac{2}{13}$

29) Two vectors $\vec{A}$ and $\vec{B}$ are perpendicular to each other then:

a) $\vec{A}.\vec{B}=0$

b) $\vec{A}x\vec{B}=0$

c) $\vec{A}+\vec{B}=0$

d) $\vec{A}-\vec{B}=0$

30) A force of $(3\hat{i}+4\hat{j})$ newton acts on a body displaces it by $(3\hat{i}+4\hat{j})$ metres. The work done by the force is:

a) 10 J
b) 12 J
c) 16 J
d) 25 J

31) Three vectors satisfy the relations $\vec{A}.\vec{B}=0$ and $\vec{A}.\vec{C}=0$ then $\vec{A}$ is parallel to:

a) $\vec{B}$
b) $\vec{C}$
c) $\vec{B}.\vec{C}$
d) $\vec{B}x\vec{C}$

32) What is the SI unit of electric field intensity?

a) Cm
b) Vm^{-1}
c) Am^{-1}
d) NA

33) The physical quantity having the dimensions $[M^{-1}L^{-3}T^{3}A^{2}]$ is:

a) resistance
b) resistivity
c) electrical conductivity
d) electro motive force

34) The unit of Stefan's constant is:

a) $Wm^{-2}K^{-1}$
b) WmK^{-4}
c) $Wm^{-2}K^{-4}$
d) $NM^{-4}K^{-4}$

35) If the two vectors $\vec{A}=2\hat{i}+3\hat{j}+4\hat{k}$ *and* $\vec{B}=\hat{i}+2\hat{j}-n\hat{k}$ are perpendicular, then the value of n is:

a) 1
b) 2
c) 3
d) 4

36) If L and C denote inductance and capacitance dimensions of LC are
   a) $[M^0L^0T^{-2}]$
   b) $[M^2L^0T^2]$
   c) $[M^0L^2T^2]$
   d) $[ML^2T^2]$

37) Which of the following quantities has units but no dimensions?
   a) displacement
   b) speed
   c) angle
   d) couple

38) Which of the following is not a unit of distance?
   a) Fermi
   b) Angstrom
   c) Micron
   d) Steradian

39) Dimensional formula for surface tension is
   a) $[M^2L^0T^{-2}]$
   b) $[ML^0T^{-2}]$
   c) $[M^0LT^{-1}]$
   d) $[M^2L^2T^{-1}]$

40) Dimensional formula for gravitational constant is
   a) $[M^{-2}L^2T^{-3}]$
   b) $[M^{-1}LT^{-2}]$
   c) $[M^{-1}L^3T^{-2}]$
   d) $[MLT^{-2}]$

41) Which of the following is not correct?
   a) Work done = Kgm^2s^{-1}
   b) Pressure = Nm^{-2}
   c) Surface tension = Nm^{-1}
   d) Momentum = Kg ms^{-1}

42) Which of the following equations is dimensionally correct?
   a) Pressure = force x area
   b) Volume x Pressure = energy
   c) Momentum x time = force
   d) Acceleration x force = time

43) Which of the following equations is dimensionally correct?
   a) $T = \sqrt{l/g}$
   b) $T = \sqrt{l/g^2}$
   c) $T = 2m\ \sqrt{l/g}$
   d) $T = 2\pi\ \sqrt{l/g}$ + constant

44) The dimensional formula $[ML^2T^{-2}]$ represents
   a) moment of force
   b) Force
   c) Acceleration
   d) Momentum

45) $\sqrt{\frac{2GM}{R}}$ has the dimensions of
   a) velocity
   b) Force
   c) acceleration
   d) displacement

46) Hertz is the Unit for
   a) frequency
   b) force
   c) electric charge
   d) magnetic flux

47) Which one of the following is not measured in units of energy ?
   a) Couple x angle turned through
   b) Moment of interia x (angular velocity)^2
   c) Force x distance
   d) Impluse x time

48) SI units of gas constant are :
   a) watt $K^{-1}mol^{-1}$
   b) newtonK^{-1} mol^{-1}
   c) jouleK^{-1} mol^{-1}
   d) ergK^{-1} mol^{-1}

49) Out of the following the only pair does not have identical dimensions is :
   a) angular momentum and Planck's constant
   b) moment of interia and moment of a force
   c) work and torque
   d) impulse and momentum

50) The dimensional representation of latent heat is identical to that of :
   a) internal energy
   b) angular momentum
   c) work
   d) gravitational potential

51) Which of the following is not essential for the three vectors to produce the zero resultant ?
   e) The resultant of any two vectors should be equal and opposite to the third vector.
   f) They should lie in the same plane
   g) They should act along the sides of a parallogram
   h) It should be possible to represent them by the three sides of triangle taken in order.

52) Dimension of velocity gradient are same as that of :
   a) time period
   b) frequency
   c) Angular Acceleration
   d) Linear Acceleration

53) Which of the following physical quantities are represented by Axial vectors
   a) displacement
   b) force
   c) velocity
   d) torque

54) Which of the following physical quantities are represented by polar vectors
   a) displacement
   b) angular velocity
   c) angular momentum
   d) torque

55) What is the maximum number of rectangular components into which a vector can be spilt in its own plane
   a) 2
   b) 3
   c) 4
   d) Infinite

56) Which of the following sets of quantities have same dimensional formulae
   a) Frequency, Angular frequency and Angular Momentum
   b) Surface tension, Stress and Spring constant
   c) Acceleration, Momentum and retardation
   d) Thermal capacity, Specific hear and entropy

57) Out of the following which is not a scalar quantity
   a) Time
   b) Momentum
   c) Volume
   d) Density

58) If g is acceleration due to gravity and λ the wavelength $\sqrt{g\lambda}$ represents
   a) acceleration
   b) velocity
   c) distance
   d) energy

59) The numerical value of a given quantity is
   a) independent of unit
   b) directly proportional to unit
   c) inversely proportional to unit
   d) directly proportional to the square root of the unit

60) If f is the frequency and g acceleration due to gravity g/f represents

e) momentum
f) velocity
g) acceleration
h) energy