

Physics 2012

3. A particle moves with constant speed in circular path. During the motion its

- (a) velocity is constant
- (b) acceleration is constant
- (c) radial acceleration towards the inside
- (d) radial acceleration towards the outside

Ans.(b)

5. Which one of the following is scalar?

- (a) Electric potential
- (b) Momentum
- (c) Velocity
- (d) Force

Ans.(a)

7. If total torque of the system is zero, then the total angular momentum of the system will be constant at

- (a) direction
- (b) both direction and magnitude
- (c) magnitude
- (d) None of the above

Ans.(b)

9. The equation of progressive wave is $y = a \sin (200 (200 t - xl)$, where x is in metre and x is in second. The velocity of wave will be

- (a) 200 m/s
- (b) 100 m/s
- (c) 50 m/s
- (d) None of these

Ans.(a)

10. According to Newtons third law, which of the following statements is true?

- (a) Both forces are acted upon one body
- (b) Both forces are acted upon the different bodies
- (c) Directions and magnitudes of both forces are same
- (d) Both forces have different magnitudes and opposite directions

Ans.(b)

14. If the length and radius of wire are doubled then Young's modulus of the wire will be

- (a) doubled
- (b) half
- (c) constant
- (d) None of these

Ans.(b)

16. What is the true of following in an elastic collision?

- (a) The kinetic energy will be conservative
- (b) The momentum will be conservative
- (c) Both kinetic energy and momentum will be conservative
- (d) None of the above

Ans.(c)

17. If the speed of particle became twice, then which of the following quantities will be doubled?

- (a) Length
- (b) Kinetic energy
- (c) Momentum
- (d) Acceleration

Ans.(c)

18. If in the lift, the body of mass 5 kg is suspended to spring balance, the lift moves downward with acceleration 10 m/s^2 , then the reading of spring balance is

- (a) more than 5 kg-wt
- (b) less than 5 kg-wt
- (c) 5 kg-wt
- (d) zero

Ans.(d)

19. The ratio of fraction of displacement of mass with which of the following quantities is constant if its motion is simple harmonic?

- (a) Velocity
- (b) Acceleration

- (c) Time period
- (d) Mass

Ans.(b)

20. If the maximum acceleration of motion of a particle is 16 m/s^2 and the maximum velocity is 24 m/s , then amplitude of the particle will be

- (a) 36 m
- (b) 20 m
- (c) 16 m
- (d) None of these

Ans.(a)

21. Two wires A and B are made from the same material. The ratio of lengths and diameters respectively are 1:2 and 2:1. If these are stretched by a force, then the ratio of these expansion of lengths will be

- (a) 2:1
- (b) 1:4
- (c) 1:8
- (d) 8:1

Ans.(c)

24. The gas is expanded in such a way so that its pressure and volume laws follow $pV^2 = \text{constant}$. In this process, the gas will become

- (a) hot
- (b) cold
- (c) nor hot neither cold
- (d) first hot after that cold

Ans.(b)

25. The time period of simple pendulum depends on

- (a) length
- (b) mass
- (c) momentum
- (d) density

Ans.(a)

27. A particle of mass 0.10 kg is executing simple harmonic motion at the rate of $20 \text{ oscillation/s}^2$ and its amplitude is 0.05 m . Its energy at equilibrium position will be

- (a) 2 J

- (b)4J
- (c)1J
- (d)zero

Ans.(a)

28. When any rigid body is in rotational motion about any axis then what is the same for all particles?

- (a) Angular velocity
- (b) Linear velocity
- (c) Radius
- (d) Linear acceleration

Ans.(a)

30. The emitted energy from any body depends on

- (a) temperature
- (b) nature of matter
- (c) area
- (d) None of these

Ans.(d)

31. What is the absorptive power of ideal black body?

- (a)0
- (b)1
- (c)
- (d) None of these

Ans.(b)

35. Absolute temperature is that temperature at which

- (a) molecular motion of all particles becomes zero
- (b) molecules move randomly
- (c) gas's atoms change to liquid
- (d) None of the above

Ans.(a)

37. When the liquid does not wet the sides of a solid, then angle of contact is

- (a) obtuse
- (b) acute
- (c) **90**
- (d) zero

Ans.(a)

38. A tuning fork is placed on the table. It produces maximum sound due to

- (a) beat
- (b) resonance
- (c) interference
- (d) stationary waves

Ans.(b)

39. A body cools down from 61°C to 59°C in 4 min. If the temperature of atmosphere is 30°C, then the time taken to cool it from 51°C to 49°C will be

- (a) 4 min
- (b) 2 min
- (c) 6 min
- (d) 8 min

Ans.(c)

40. Temperature is a measurement of degree of coldness or hotness of an object. The definition is based on

- (a) Zeroth law of thermodynamics
- (b) First law of thermodynamics
- (c) Second law of thermodynamics
- (d) Newton's law of cooling

Ans.(a)

41. The correct relation between isothermal gradient and adiabatic gradient is

- (a) adiabatic gradient = γ x isothermal gradient
- (b) isothermal gradient = γ x adiabatic gradient
- (c) adiabatic gradient = γ^2 x isothermal gradient
- (d) isothermal gradient = γ^2 x adiabatic gradient

Ans.(a)

42. If root mean square velocity for hydrogen gas is 318 m/s and density is 8.99 kg/m³ then the pressure of gas will be

- (a) 3 atm
- (b) 1 atm

- (c) 2 atm
- (d) None of these

Ans.(a)

43. pV/kT represents

- (a) number of molecules
- (b) number of moles
- (c) universal gas constant
- (d) None of the above

Ans.(a)

44. The spherical shape of rain drop is due to

- (a) surface tension
- (b) viscosity
- (c) elasticity
- (d) gravity

Ans.(a)

49. To cool a liquid rapidly, cooling system should be used

- (a) in middle
- (b) on head
- (c) any point
- (d) None of these

Ans.(b)

50. A stone is shot straight upward with a speed of 20 m/s from a tower 200 m high. The speed with which it strikes the ground is approximately

- (a) 60 m/s
- (b) 65 m/s
- (c) 70 m/s
- (d) 75 m/s

Ans.(a)

51. When light ray goes from air to water, then its quality that remains unchanged is

- (a) frequency
- (b) wavelength
- (c) speed
- (d) None of these

Ans.(a)

52. Sources are in phase when

- (a) first phase is constant with the time
- (b) first phase changes with the time
- (c) first phase is constant with the displacement
- (d) None of the above

Ans.(a)

53. Find the fundamental frequency of a closed pipe, if the length of pipe is 1 m. (speed of sound in air = 320 m/s)

- (a) 320 Hz
- (b) 160 Hz
- (c) 80 Hz
- (d) 40 Hz

Ans.(c)

54. The musical interval between two tones of frequencies 400 Hz and 200 Hz is

- (a) 2
- (b) 200
- (c) 1
- (d) None of these

Ans.(a)

57. If in diffraction by single slit, the width of slit is equal to wavelength of light, then what happened at the screen?

- (a) Image of slit
- (b) Diffraction band
- (c) Equal illuminate
- (d) Unequal illuminate

Ans.(c)

58. Two positive point charges $12 \mu\text{C}$ and $8 \mu\text{C}$ are placed at a distance work done to bring closer 4 cm will be

- (a) 5.8 J
- (b) 5.8 eV
- (c) 13 J
- (d) 13 eV

Ans.(c)

59. The object at distance of 20 cm is placed in front of convex lens of focal length 10 cm, where will be image formed?

- (a) 10 cm
- (b) 20 cm
- (c) 5cm
- (d) 25cm

Ans.(b)

61. Two tuning forks of frequencies 256 and 258 Hz produce S beats/s with the third tuning fork. The frequency of third tuning fork will be

- (a) 120 Hz
- (b) 115 Hz
- (c) 105 Hz
- (d) 95 Hz

Ans.(c)

67. The electric field gets induced by changing magnetic force lines passing through a conductor. This can be understood by which law?

- (a) Faraday's law
- (b) Ampere's law
- (c) Lenz's law
- (d) None of these

Ans.(a)

68. In a transformer, $e = 110$ V and $fig = 440$ V. then its round ratio will be

- (a) 4:1
- (b) 1:4
- (c) 1:3
- (d) 1:2

Ans.(b)

70. In a potentiometer experiment two cells of emf's E_1 and E_2 are used in series and in conjunction and the balancing length is found to be 58 cm of the wire. If the polarity of E_2 is reversed, then the balancing length becomes 29 cm. The ratio .&of

E , the emf of the two cells is

- (a) 1:1
- (b) 2:1

- (c) 3 : 1
- (d) 4 : 1

Ans.(c)

75. Generator generates electric current. In actual, it is a source of

- (a) inducted force
- (b) emf
- (c) electric force
- (d) None of these

Ans.(b)

76. Lenz's law is accordance on

- (a) conservation of energy
- (b) conservation of charge
- (c) conservation of momentum
- (d) None of the above

Ans.(a)

77. When the current flows from the conductor, then force above of magnetic field is

- (a) in circular form around the wire
- (b) near the wire and parallel to wire
- (c) near the wire and perpendicular to wire
- (d) None of the above

Ans.(a)

78. In the following figure, a coil of radius 2 cm is shown along with a coil of radius 7 cm present at its centre. Each coil has 100 round and big coil has 5 A current. What should be the current in small coil so that total magnetic field at centre is 2 mT?

- (a) 1.44 A
- (b) 0.793 A
- (c) 2.88 A
- (d) 3.4 A

Ans.(b)

80. On the basis which of the following a nucleus can be explained?

- (a) By nuclear liquid drop model
- (b) By Thomson model

- (C) By Rutherford model
- (d) None of the above

Ans.(a)

84. Increasing the principle quantum number, the energy gap between consequence energy state

- (a) increases
- (b) decreases
- (c) remains unchanged
- (d) None of these

Ans.(b)

85. First law of Kirchhoff is accordance on

- (a) conservation of charge
- (b) conservation of energy
- (c) conservation of momentum
- (d) None of the above

Ans.(a)

86. Three capacitors of equal capacitances $3 \mu F$ each are connected in a circuit. Then their maximum and minimum capacities will be

- (a) $9\mu F, 1\mu F$
- (b) $8\mu F, 2\mu F$
- (c) $9\mu F, 0\mu F$
- (d) $3\mu F, 2\mu F$

Ans.(a)

87. For non-conductors, the forbidden energy gap is

- (a) 5eV
- (b) 1.1eV
- (c) 20 eV
- (d) None of these

Ans.(a)

88. Change of AC to DC is called

- (a) rectification
- (b) polarization

- (c) amplification
- (d) None of these

Ans.(a)

89. Write the resolving powers of α , p and γ to ascending order.

- (a) α, p, γ
- (b) γ, p, α
- (c) p, α, γ
- (d) None of these

Ans.(a)

90. Diffraction of electron beam is proved by

- (a) Davisson-Germer
- (b) Berg
- (c) Newton
- (d) Einstein

Ans.(a)

91. On the basis of which photoelectric effect is explained?

- (a) Relativity theory
- (b) The electromagnetic waves of light
- (c) Energy spectrum of atoms
- (d) None of the above

Ans.(c)

95. The valency of carbon atom is

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

Ans.(d)

96. What is valency of impurity added for donor atoms?

- (a) Pentavalent
- (b) Trivalent
- (c) Tetravalent
- (d) None of these

Ans.(a)

98. What should be the capacity of capacitor of R-C circuit, in which the value of resistance is 10 to become the value of time constant 10?

- (a) 10 μ F
- (b) 100 μ F
- (c) 1000 μ F
- (d) 10,000 μ F

Ans.(d)

99. The energy needed to remove the one electron from neutral helium atom is 24.6 eV. Then the energy needed to remove both the electrons from neutral helium atom is

- (a) 79.0 eV
- (b) 51.8 eV
- (c) 49.2 eV
- (d) 38.2 eV

Ans.(a)