

Class: 9
Subject: Science
Topic: ASK1509FT01
No. of Questions: 60

Physics

- Q1. Power is a measure of the _____
(a) rate of change of momentum
(b) force which produces motion
(c) change of energy
(d) rate of change of energy

Sol. (d)

- Q2. Two objects of masses 1×10^{-3} kg and 4×10^{-3} kg have equal momentum. What is the ratio of their kinetic energies?
(a) 4:1
(b) 2:1
(c) 16:1
(d) $\sqrt{2} : 1$

Sol. (a)

- Q3. A 40 newton object is released from a height of 10 m. Just before it hits the ground, its kinetic energy, in joules is _____
(a) 400
(b) 3920
(c) 2800
(d) 4000

Sol. (a)

- Q4. If the speed of an object is doubled then its kinetic energy is _____
(a) doubled
(b) quadrupled
(c) halved
(d) tripled

Sol. (b)

Q5. Sound waves do not travel through

- (a) solids
- (b) liquids
- (c) gases
- (d) vacuum

Sol. (d)

Q6. The physical quantity, which oscillates in most waves, is

- (a) mass
- (b) energy
- (c) amplitude
- (d) wavelength

Sol. (c)

Q7. Sound waves are

- (a) longitudinal
- (b) transverse
- (c) partly longitudinal and partly transverse
- (d) sometimes longitudinal and sometimes transverse

Sol. (a)

Q8. The frequency which is not audible to the human ear is

- (a) 50 Hz
- (b) 500 Hz
- (c) 5000 Hz
- (d) 50000 Hz

Sol. (d)

Q9. SI unit of gravitational constant is _____.

- (a) $N\ m^2\ kg^2$
- (b) $N\ m^2\ kg^{-2}$
- (c) $N\ m^2\ s^{-2}$
- (d) $N\ m\ kg^{-2}$

Sol. (b)

Q10. What is the value of gravitational constant?

- (a) $6.6734 \times 10^{-11} N\ m^2 / kg^2$
- (b) $6.6734 \times 10^{-10} N\ m^2 / kg^2$
- (c) $6.6734 \times 10^{-11} N\ m / kg^2$
- (d) $6.6734 \times 10^{-11} N\ m^2 / kg$

Sol. (a)

Q11. If the distance between two bodies is doubled, the force of attraction F between them will be _____

- (a) $1/4\ F$
- (b) $2\ F$
- (c) $1/2\ F$
- (d) F

Sol. (a)

Q12. The force of gravitation between two bodies in the universe does not depend on

- (a) the distance between them
- (b) the product of their masses
- (c) the sum of their masses
- (d) the gravitational constant

Sol. (c)

- Q13. A and B are two objects with masses 100 kg and 75 kg respectively, then _____ .
- (a) both will have the same inertia
 - (b) B will have more inertia
 - (c) A will have more inertia
 - (d) both will have less inertia

Sol. (c)

- Q14. The resultant of balanced forces is _____
- (a) non zero
 - (b) equal to zero
 - (c) not equal to zero
 - (d) equal to the acceleration produced in the body

Sol. (b)

- Q15. The physical quantity, which is the measure of inertia, is _____
- (a) density
 - (b) weight
 - (c) force
 - (d) mass

Sol. (d)

- Q16. The sparks produced during sharpening of a knife against a grinding wheel leaves the rim of the wheel tangentially. This is due to _____
- (a) inertia of rest
 - (b) inertia of motion
 - (c) inertia of direction
 - (d) force applied

Sol. (c)

- Q17. The distance (s) in metres travelled by a particle is related to time (t) in seconds by the equation of motion $-S = 10t + 4t^2$. What is the initial velocity of the body?
- (a) 10 m/s
 - (b) 6 m/s
 - (c) 4 m/s
 - (d) 10 m/s²

Sol. (a)

- Q18. For the equation $-S = 10t + 4t^2$ what is the acceleration of the body?
- (a) 8 m/s²
 - (b) 10 m/s²
 - (c) 4 m/s²
 - (d) 8 m/s

Sol. (a)

- Q19. A body moving along a straight line at 20 m/s decelerates at the rate of 4 m/s². After 2 seconds its speed will be equal to
- (a) 8 m/s
 - (b) 12 m/s
 - (c) 16 m/s
 - (d) -12 m/s

Sol. (b)

- Q20. Give the equation of motion connecting u, v, a and s where the symbols have their usual meaning

- (a) $V = u + at$
- (b) $S = ut + \frac{1}{2} at^2$
- (c) $v^2 - u^2 = 2aS$
- (d) $a = \frac{v-u}{t}$

Sol. (c)

Chemistry

- Q21. Boyle's law states that the
- (a) Pressure of a gas is directly proportional to the temperature at constant volume
 - (b) Pressure of a gas is inversely proportional the volume at constant tempter
 - (c) Volume is directly proportional to the temperature at constant pressure
 - (d) None of the above

Sol. (b)
Boyle's law
 $P \propto \frac{1}{V}$
 $P = \frac{K}{V}$
 $PV = K$

- Q22. All gases will occupy zero volume when the temperature is reduced to
- (a) 273 °C
 - (b) 273 °A
 - (c) - 273 °C
 - (d) 0°C

Sol. (d)

- Q23. Densities of two gases are in the ratio 1 : 2 and their temperatures are in the ratio 2 : 1, then the ratio of their respective pressure is
- (a) 1 : 1
 - (b) 1 : 2
 - (c) 2 : 1
 - (d) 4 : 1

Sol. (d)

$$\frac{d_1}{d_2} = \frac{1}{2}, \quad \frac{T_1}{T_2} = \frac{2}{1} \quad \therefore \quad \frac{P_1}{P_2} = \frac{V_2}{V_1} \times \frac{T_1}{T_2} = \frac{T_1 \cdot d_1}{T_2 \cdot d_2}$$
$$\frac{P_1}{P_2} = \frac{2}{1} \times \frac{1}{2} = \frac{1}{1}$$

- Q24. According to Graham's lawt at a given temperature, the ratio of the rates of diffusion r_A / r_B of gases A and B is given by

- (a) $\left(\frac{P_A}{P_B}\right) \left(\frac{M_A}{M_B}\right)^{1/2}$
- (b) $\left(\frac{M_A}{M_B}\right) \left(\frac{P_A}{P_B}\right)^{1/2}$

(c) $\left(\frac{P_B}{M_B}\right) \left(\frac{P_A}{M_A}\right)^{1/2}$

(d) $\left(\frac{M_A}{M_B}\right) \left(\frac{P_B}{P_A}\right)^{1/2}$

Sol. (c)

$$\frac{r_A}{r_B} = \sqrt{\frac{d_B}{d_A}}, \quad PV = nRT \Rightarrow PV = \frac{m}{M} RT$$

$$\Rightarrow P = \frac{d}{M} RT \Rightarrow d = \frac{PM}{RT}$$

$$\Rightarrow \frac{r_A}{r_B} = \sqrt{\frac{P_B M_B}{P_A M_A}}$$

Q25. Two substances A and B when brought together form a substance C with the evolution of heat.

The properties of C are entirely different from those of A and B. The substance C is

- (a) A compound
- (b) An element
- (c) A mixture
- (d) None of the above

Sol. (a)

Q26. Which component of the mixture (Fe + S) reacts with dil. HCl and gives hydrogen gas?

- (a) Sulphur
- (b) Iron
- (c) Both
- (d) None

Sol. (b)

Q27. Which flow chart correctly describes a homogeneous material?

- (a) Unknown – density – 3 layers
- (b) Unknown – filtration – two substances
- (c) Unknown – magnet – two substances
- (d) Unknown – boiling - one temperature

Sol. (d)

Homogeneous liquid have a particular boiling point.

Q28. Distillation is a good separation technique for

- (a) Solids
- (b) Liquids
- (c) Solid alloys
- (d) Gases

Sol. (b)
Distillation is a separation techniques used for separation of miscible liquids having different boiling point.

- Q29. One mole of a gas occupies a volume of 22.4 L. This is derived from
- (a) Berzelius' hypothesis
 - (b) Gay Lussac's law
 - (c) Avogadro's law
 - (d) Dalton's law

Sol. (c)

- Q30. The weight of a molecule of the compound $C_{60}H_{122}$ is
- (a) $1.4 \times 10^{-21} g$
 - (b) $1.09 \times 10^{-21} g$
 - (c) $5.025 \times 10^{23} g$
 - (d) $16.023 \times 10^{23} g$

Sol. (a)

$$\begin{aligned}\text{Molecular weight of } C_{60}H_{122} &= 12 \times 60 + 122 \times 1 \\ &= 720 + 122 = 842\end{aligned}$$

$$\therefore 6 \times 10^{23} \text{ molecule } C_{60}H_{122} \text{ has mass}$$

$$\therefore 1 \text{ molecule } C_{60}H_{122} \text{ has mass}$$

$$= \frac{842}{6 \times 10^{23}} = 140.333 \times 10^{-23} gm = 1.4 \times 10^{-21} gm$$

- Q31. The number of molecules of CO_2 present in 44g of CO_2 is
- (a) 6.02×10^{23}
 - (b) 3×10^{23}
 - (c) 12×10^{23}
 - (d) 3×10^{10}

Sol. (a)

$$\begin{aligned} \text{Wt. of } CO_2 &= 44, \text{ mol wt. of } CO_2 = 44 \\ \text{No. of molecule} &= \frac{\text{wt. of } CO_2}{\text{mol wt. of } CO_2} \times 6.02 \times 10^{23} \\ &= \frac{44}{44} \times 6.02 \times 10^{23} = 6.02 \times 10^{23} \end{aligned}$$

Q32. Methoxychlor, a garden insecticide, has the molecular formula $C_{16}H_{15}Cl_3O_2$. what is the total number of moles of atoms in a 3.0 mg sample? (Atomic weights: C = 12.01, H = 1.008, Cl = 33.45, O = 16.00).

- (a) 8.7×10^{-6}
- (b) 3.0×10^{-5}
- (c) 3.1×10^{-1}
- (d) 3.1×10^{-4}

Sol. (d)

Q33. The work function of a metal is 4.0 eV. The longest wavelength of light that can cause photoelectron emission from the metal is approximately:

- (a) 540 nm
- (b) 400 nm
- (c) 300 nm
- (d) 220 nm

Sol. (c)

$$\begin{aligned} \text{Work function} &= 4.0 \text{ eV} = 4.0 \times 1.6 \times 10^{-19} \text{ J} \\ &= h\nu_0 = \frac{hc}{\lambda} = \frac{6.63 \times 10^{-34} \times 3 \times 10^8}{\lambda} \\ \text{or } \lambda &= \frac{6.63 \times 10^{-34} \times 3 \times 10^8}{4.0 \times 1.6 \times 10^{-19}} = 300 \times 10^{-9} \text{ m} \end{aligned}$$

Q34. The four quantum numbers that could identify the third 3p electron in sulphur are

- (a) $n = 3, l = 0, m = +1, s = +\frac{1}{2}$
- (b) $n = 2, l = 2, m = -1, s = +\frac{1}{2}$
- (c) $n = 3, l = 2, m = +1, s = -\frac{1}{2}$
- (d) $n = 3, l = 1, m = -1, s = +\frac{1}{2}$

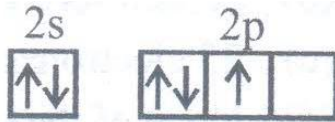
Sol. (d)

Q35. Which of the following orbital diagram violates the Pauli's exclusion principle?

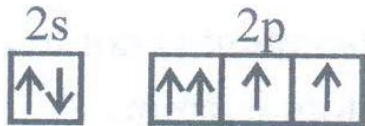
(a)



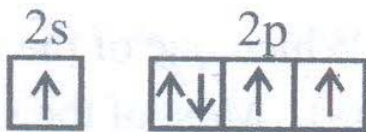
(b)



(c)



(d)



Sol.

(c)

Two electrons in the same orbital cannot have the same spins.

Q36. ${}_{13}\text{Al}^{27}$ is a stable isotope. ${}_{13}\text{Al}^{29}$ is expected to disintegrate by

- (a) α – emission
- (b) β – emission
- (c) Positron emission
- (d) Proton emission

Sol.

(b)

n/p ratio is too large, which decrease by β – emission.

Q37. 10 K is equal to

- (a) 283 °C
- (b) – 263 °C
- (c) 263 °C
- (d) – 283 °C

Sol.

(b)

Q38. Which one of the following colloidal solution is positive sol?

- (a) Blood
- (b) Clay soil
- (c) Smoke
- (d) Gelatin in strongly acidic solution

Sol. (d)

Q39. The most common solvent of Earth is

- (a) Gasoline
- (b) Water
- (c) Turpentine
- (d) None of the above

Sol. (b)

Q40. The solution of sugar in water contains

- (a) Free atoms
- (b) Free ions
- (c) Free molecules
- (d) Free atom and molecules

Sol. (c)

Biology

Q41. Group of viral borned disease is

- (a) Gepatities and typhoid
- (b) Polio and dengue
- (c) Rabies and tetanus
- (d) Measles and cholera

Sol. (b)

Q42. Peptic ulcers are caused by

- (a) Bacterium, Helicobacter pylori
- (b) Virus
- (c) Protozoan, plasmodium vivax
- (d) The deficiency of hormone

Sol. (a)

- Q43. Trypanosoma, Leishmania and Plasmodium are the example of
- (a) Virus
 - (b) Bacteria
 - (c) Protozoa
 - (d) Worm

Sol. (c)

- Q44. The group of diseases spread by houseflies is
- (a) Malaria, Cholera, Scabies
 - (b) Typhoid, Ricketts, Diarrhoea
 - (c) Typhoid, Dysentery, Tuberculosis
 - (d) Intestinal worm, Scurvy, Vomiting

Sol. (c)

- Q45. In high yielding 'hybrid crop varieties' to exploit hybrid vigor, the farmers need to purchase fresh hybrid seed every year, because
- (a) They are not allowed to grow their own seed
 - (b) The hybrid vigour is lost due to inbreeding depression
 - (c) The government of India has accepted Dunkel's proposals
 - (d) It is cheaper to purchase fresh seed

Sol. (b)

- Q46. Livestock refers to
- (a) Pet animals
 - (b) Poultry and pet animals
 - (c) Domestic animals which are kept for use or profit
 - (d) None of the above

Sol. (c)

- Q47. Which one of the following combinations are most suitable for composite fish culture?
- (a) Surface feeders and bottom feeders
 - (b) Middle zone feeders and bottom feeders
 - (c) Surface feeders only
 - (d) Surface feeders, middle zone feeders and bottom feeders

Sol. (d)

Q48. Which of the following poultry bird lays maximum number of eggs annually?

- (a) ILS – 82
- (b) B – 77
- (c) HH – 260
- (d) IBL – 80

Sol. (c)

Q49. Human - caused changes to the nitrogen cycle are expected to result in

- (a) An increase in acid rain
- (b) An increase in the loss of species from ecosystem
- (c) Higher concentrations of a greenhouse gas
- (d) All of the above

Sol. (d)

Q50. Biosphere occurs

- (a) In lithosphere
- (b) In lithosphere and hydrosphere
- (c) Interaction of lithosphere, hydrosphere and atmosphere
- (d) In atmosphere and hydrosphere

Sol. (c)

Q51. The current carbon dioxide concentration of atmosphere is

- (a) 300 ppm
- (b) 345 ppm
- (c) 387 ppm
- (d) 423 ppm

Sol. (c)

Q52. Drip irrigation is a device

- (a) To recharge the ground water
- (b) To reduce wastage of water
- (c) To prevent water pollution
- (d) All of them

Sol. (b)

- Q53. The golgi bodies are related to
- (a) Respiration
 - (b) Excretion
 - (c) Secretion
 - (d) Circulation

Sol. (c)

- Q54. Transport proteins are required for –
- (a) Diffusion
 - (b) Osmosis
 - (c) Facilitated transport
 - (d) Facilitated transport and active transport

Sol. (d)

- Q55. Which set does clearly identify striated muscles?
- (a) Cylindrical, syncytial and unbranched
 - (b) Spindle, unbranched and uninucleated
 - (c) Cylindrical, striped and nucleated
 - (d) Cylindrical, striped and branched

Sol. (a)

- Q56. Nucleated part of nerve cell is called
- (a) Axon
 - (b) Dendrites
 - (c) Cyton
 - (d) None of these

Sol. (c)

- Q57. Contractile proteins are found in
- (a) Bones
 - (b) Blood
 - (c) Muscles
 - (d) Cartilage

Sol. (c)

- Q58. The arthropods are the most successful animals group on earth, and they share all the following characteristics except _____
- (a) Endoskeleton
 - (b) Exoskeleton
 - (c) Jointed appendages
 - (d) Complex nervous system

Sol. (a)

- Q59. Corals are
- (a) Poriferans attached to some solid support
 - (b) Cnidarians that are solitary living
 - (c) Poriferans present at the sea bed
 - (d) Cnidarians that live in colonies

Sol. (d)

- Q60. Clitellum occurs in segments
- (a) 8 – 10
 - (b) 10 – 12
 - (c) 14 – 15
 - (d) 16 – 18

Sol. (c)