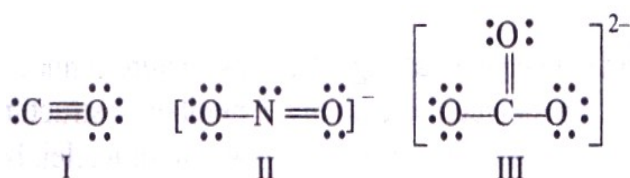


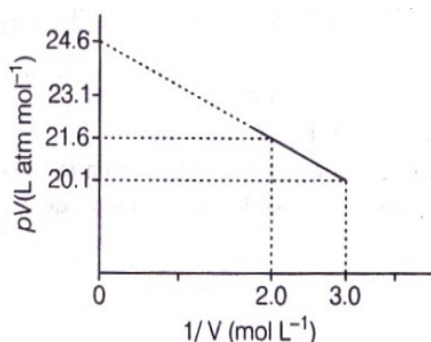
- Q.1 How many number of aluminum ions are present in 0.051 g of aluminum Oxide?
 (a) 6.023×10^{23} ions (b) 3 ions
 (c) 6.023×10^{20} ions (d) 9 ions
- Q.2 The angular momentum of electrons in d orbital
 (a) $\sqrt{6} \frac{h}{2\pi}$ (b) $\sqrt{2} \frac{h}{2\pi}$
 (c) $\sqrt{3} \frac{h}{2\pi}$ (d) $0 \frac{h}{2\pi}$
- Q.3 Henry Moseley plotted a graph between $\sqrt{\nu}$ and Z, where ν was the frequency of X-ray emitted by an atom and Z was its atomic number. This graph showed that
 (a) The atomic mass is fundamental properties of an element
 (b) The atomic number is fundamental properties of an element
 (c) Both (a) and (b)
 (d) The frequency (ν) was independent of atomic number
- Q.4 Lewis dot structure of CO, NO_2^- and CO_3^{2-} are I, II and III respectively



Which of the above structure(s) is/ are wrong?

- (a) Only I (b) Only II
 (c) Only III (d) All of these
- Q.5 For one mole of a van der Waals' gas when $b=0$ and $T=300\text{k}$, the pV vs $1/V$ plot is shown below. The value of the van der Waals' constant a (atm L mol^{-2})

- (a) 1.0
 (b) 4.5
 (c) 1.5
 (d) 3.0

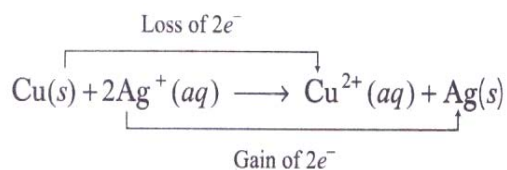


- Q.6 For the reaction, $\text{X}_2\text{O}_4(l) \rightarrow 2\text{XO}_2(g)$, $\Delta U = 2.1 \text{ kcal}$, $\Delta S = 20 \text{ cal K}^{-1}$ at 300 K. Hence, ΔG is
 (a) 2.7 Kcal (b) -2.7 Kcal
 (c) 9.3 Kcal (d) -9.3 Kcal
- Q.7 A 0.2 molar solution of formic acid is 3.2% ionized. Its ionization constant is
 (a) 9.6×10^{-3} (b) 2.1×10^{-4}

(c) 1.25×10^{-6}

(d) 4.8×10^{-5}

Q.8 In the reaction



Copper metal, $\text{Cu}(s)$ is oxidized to $\text{Cu}^{2+}(aq)$, While $\text{Ag}^+(aq)$ is reduced to silver metal, $\text{Ag}(s)$, then the equilibrium greatly lies in favour of

(a) $\text{Ag}^+(s)$ and $\text{Cu}^{2+}(aq)$

(b) $\text{Ag}^+(aq)$ and $\text{Cu}^{2+}(s)$

(c) $\text{Ag}(s)$ and $\text{Cu}^{2+}(aq)$

(d) $\text{Cu}^{2+}(aq)$ and $\text{Ag}(s)$

Q.9 Given, force = $\frac{\alpha}{\text{Density} + \beta^3}$

What are the dimensions of α . β

(a) $[\text{ML}^2\text{T}^{-2}]$, $[\text{ML}^{-1/3}]$

(b) $[\text{M}^2 \text{L}^4\text{T}^{-2}]$, $[\text{M}^{1/3} \text{L}^{-1}]$

(c) $[\text{M}^2 \text{L}^{-2}\text{T}^{-2}]$, $[\text{M}^{1/3} \text{L}^{-1}]$

(d) $[\text{M}^2 \text{L}^{-2}\text{T}^{-2}]$, $[\text{ML}^{-2}]$

Q.10 Find the dimensions of a/b in the equation $F = a\sqrt{x} + bt^2$, Where F is a force, x is distance and t is time.

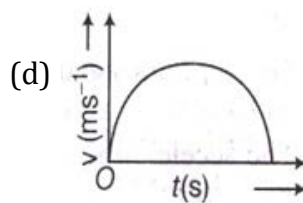
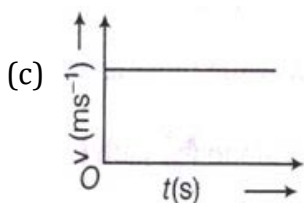
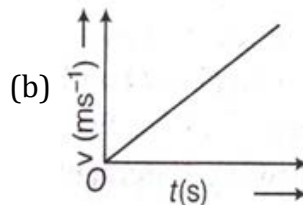
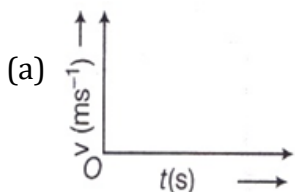
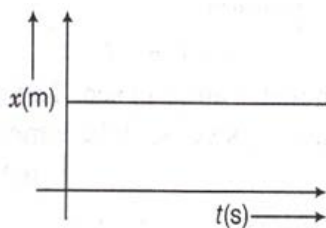
(a) $[\text{L}^{-1/2} \text{T}^2]$

(b) $[\text{L}^2 \text{T}^{-3/2}]$

(c) $[\text{L} \text{T}^{-4}]$

(d) $[\text{L}^{3/2} \text{T}^4]$

Q.11 For the x - t graph given below, the v - t graph is given as



Q.12 The speed of a projectile at the maximum height is $\frac{1}{2}$ its initial speed. Find the ratio of range of projectile to the maximum height attained.

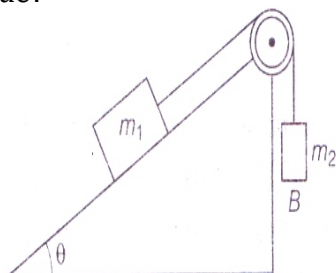
(a) $4\sqrt{3}$

(b) $\frac{4}{\sqrt{3}}$

(c) $\frac{\sqrt{3}}{4}$

(d) 6

Q.13 Mass m_1 moves on a slope making an angle θ with the horizontal and is attached to mass m_2 by a string passing over a frictionless pulley as shown in figure. The coefficient of friction between m_1 and the sloping surface is μ . Which of the following statements are true?



(a) If $m_2 > m_1 \sin\theta$, the body will move up the plane

(b) If $m_2 > m_1 (\sin\theta + \mu\cos\theta)$ the body will move up the plane

(c) If $m_2 < m_1 (\sin\theta + \mu\cos\theta)$ the body will move up the plane

(d) If $m_2 < m_1 (\sin\theta - \mu\cos\theta)$ the body will move down the plane

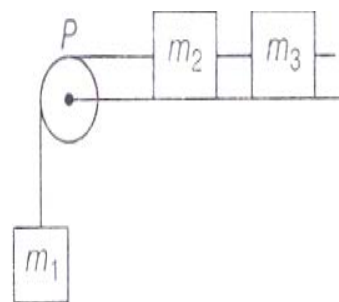
Q.14 A system consists of three masses m_1 , m_2 and m_3 connected by a string passing over a pulley P. The mass m_1 hangs freely and m_2 and m_3 are on a rough horizontal table (the coefficient of friction $=\mu$). The pulley is frictionless and of negligible mass. The downward acceleration of mass m_1 is (Assume, $m_1 = m_2 = m_3 = m$)

(a) $\frac{g(1-g\mu)}{9}$

(b) $\frac{2g\mu}{3}$

(c) $\frac{g(1-2\mu)}{3}$

(d) $\frac{g(1-2\mu)}{2}$



- Q.15 When a stone is rotated with uniform speed in horizontal plane by means of a string, the magnitude of the momentum is fixed but its direction changes. A force is needed to cause this change in momentum vector. This force is provided by



- (a) gravity
(b) our hand through the string
(c) Both gravity and our hand through the string
(d) None of the above
- Q.16 Both cellulose and starch are homopolymers of glucose but we cannot digest cellulose, while starch is digested, why.
- (a) Our body has α –amylase, which can digest only starch having α –linkage
(b) Our body has β –amylase, which can digest only starch having β – linkage
(c) Our body has both α –amylase and β –amylase, which both require for starch digestion but not for cellulose
(d) Actually cellulose require for cellulose digestions , which is absent in man
- Q.17 We intake most of our medicine as oral tablet but insulin hormone cannot be taken orally, it is taken as subcutaneous, why.
- (a) intake of subcutaneous is fastest process but oral route is slow
(b) insulin is amino acid, which change with protein in gastro intestinal tract by enzyme
(c) Insulin is protein, which change into amino acid in gastro intestinal tract by enzyme activity
(d) All of these above
- Q.18 It is advised that we should not sleep under tree during night, it is why
- (a) In night plant release excess of CO_2 due absence of photosynthesis
-

- (b) In night, plant release less CO_2 , which can impair breathing
- (c) In night, plant release, harmful pollen, which can allergy
- (d) In night, plant consume more O_2 from surrounding so there will be low O_2 concentration
- Q.19 If we soaked pea seeds and wheat grain in water, pea seeds, show more swelling than wheat grain, it is because
- (a) Cell membrane of pea seed is more permeable
- (b) Cell membrane of wheat seed is less permeable
- (c) Imbibition capacity of protein is more than that of starch
- (d) Less hydrophilic colloids are present in wheat grain
- Q.20 A bacteria divide once every minute. If bacteria is allowed to divide for a hour and it filled a cup, then how much time will it take to fill $1/4$ of the cup
- (a) 30 minute (b) 15 minute
- (c) 59 minute (d) 58 minute
- Q.21 There are given name of some animal like jelly fish, devilfish, silver fish, cuttle fish, dog fish, cat fish, flying fish, star fish, out of which find out. How many animal belong to original fish.
- (A) 4 (b) 5
- (c) 3 (d) 6
- Q.22 How many animal are correctly match with their correct common name:
- (i) Lizard - Hemidactylus
- (ii) Pigeon - Columba Livia
- (iii) Whale - Balenopterus
- (iv) Bat - ornithoryncus
- (v) Pennutula - sea fan
- (vi) Euplectela - Venus flower basket
- (a) Only I, II, III (b) Only I, II, III, VI
- (v) Only III, IV, V (d) Only I, III, V, VI
- Q.23 The edible part of fungus mushroom is
- (a) Basiocarp (b) Ascidiocarp
- (c) Gills (d) Root
-

Q.24 In a typical heart if EDV is 120ml of blood and ESV is 50ml of blood the stroke volume (SV) is:

(a) $120 - 50 = 70 \text{ ml}$

(b) $12 = 70 + 50\text{ml}$

(c) $120 \times 50 = 6000 \text{ ml}$

(d) $120 \div 50 = 2.4 \text{ ml}$

Q.25 Two adjacent cell A and B are being studied . Cell A has solute potential – 10 bars and pressure potential 2 bars. Cell B has solute potential – 20 bars and pressure potential 6 bars. What will the direction of movement of water:

(a) From cell A to B

(b) From cell B to A

(c) Water will move in both direction

(D) No movement of water

ANSWER KEY**1.c****2.a****3.b****4.a****5.c****6.b****7.b****8.d****9.c****10.a****11.a****12.b****13.b****14.c****15.b****16.a****17.c****18.a****19.c****20.d****21.c****22.b****23.a****24.a****25.a**
