Competishun

52/6, Opposite Metro Mas Hospital, Shipra Path, Mansarovar

Date: 01/04/2024

Time: 3 hours **Max. Marks:** 300

PRAVEEN-2 (24-25)-MPT-1

Physics

Single Choice Question

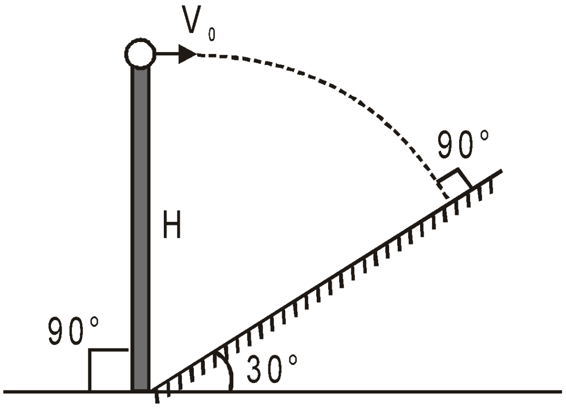
Q1 A stone projected at angle ‘θ’ with horizontal from the roof of a tall building falls on the ground after three second. Two second after the projection it was again at the level of projection. Then the maximum height of particle from ground is (in m). (g = $10 m/s^2$) –

a) 5 m **b)** 25 m **c)** 20 m **d)** 15 m

Q2 A particle is projected from bottom of the inclined plane at angle 37° with the inclined plane in upward direction with speed 10 m/s. The angle of inclined plane with horizontal is 53°. Then the maximum height attained by the particle from ground will be –

a) 3m **b)** 4m **c)** 5m **d)** zero

Q3 In fig. the angle of inclination of the inclined plane is 30°. Find the horizontal velocity V_0 so that the particle hits the inclined plane perpendicularly at t = $\sqrt{3}$ sec.



a) 5m/s **b)** 10m/s **c)** 20m/s **d)** 15m/s

Q4 A body is thrown vertically upwards from the top A of tower. It reaches the ground in t_1 seconds. If it thrown vertically downwards from A with the same speed it reaches the ground in t_2, seconds. If it is allowed to fall freely from A, then the time it takes to reach the ground is given by :-

a) $t = \frac{t_1 + t_2}{2}$ **b)** $t = \frac{t_1 - t_2}{2}$ **c)** $t = \sqrt{t_1 t_2}$ **d)** $t = \sqrt{\frac{t_1}{t_2}}$

Q5 A particle P is moving with a constant speed of 6m/s in a direction $2\hat{i} - \hat{j} - 2\hat{k}$. When t = 0, P is at a point whose position vector is $3\hat{i} + 4\hat{j} - 7\hat{k}$. Find the position vector of the particle P after 4 seconds.

a) $18\hat{i} - 4\hat{j} - 23\hat{k}$ **b)** $19\hat{i} - 4\hat{j} - 23\hat{k}$ **c)** $19\hat{i} + 4\hat{j} - 23\hat{k}$
d) $19\hat{i} - 4\hat{j} + 23\hat{k}$

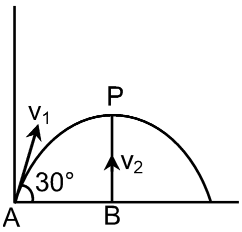
Q6 A particle is moving along a straight line in same direction with constant acceleration. At the end of tenth second its velocity becomes 20 m/s and in tenth second it has a displacement of 10 m. Then the acceleration of the particle will be-

a) 10 m/s^2 **b)** 20 m/s^2 **c)** $\frac{1}{5} m/s^2$ **d)** 3.8 m/s^2

Q7 A point moves in a straight line under the retardation a v^2, where ‘a’ is a positive constant and v is speed. If the initial speed is u, the distance covered in ' t ' seconds is :

a) a u t **b)** $\frac{1}{a}\ln(\text{a u t})$ **c)** $\frac{1}{a}\ln(1 + \text{a u t})$ **d)** a ln (a u t)

Q8 A body is projected with velocity v_1 from the point A at an angle of 30° above the horizontal. At the same time another body is thrown vertically upward from point B with velocity v_2. The point B lies vertically below the highest point P of trajectory of the first body. If both the bodies meet at the highest point P, then the ratio $\frac{v_1}{v_2}$ must be



a) 1 **b)** 0.5 **c)** 2 **d)** $\frac{2}{\sqrt{3}}$

Q9 A particle moves in the X-Y plane according to the law x = kt and y =kt (1 – αt), where k and α are positive constants and t is time. What is the equation of trajectory of the particle.

a) $y = kx$ **b)** $y = x - \frac{\alpha x^2}{k}$ **c)** $y = \frac{\alpha x^2}{k}$ **d)** $y = \alpha x$

Q10 A particle moves rectilinearly with a constant acceleration 1 m/s^2. Its speed after 10 seconds is 5 m/s. The distance covered by the particle in this duration is (Initial & final velocities are in opposite direction)

a) 20 m **b)** 25 m **c)** 30 m **d)** 50 m

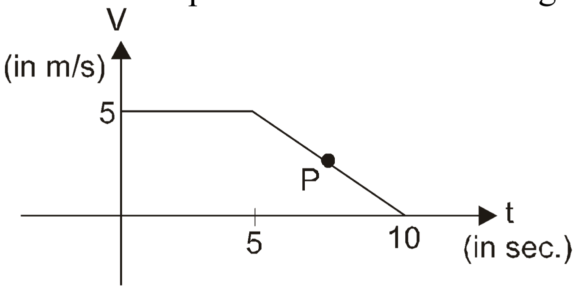
Q11 A particle moves in x-y plane with constant acceleration $\vec{a} = 6\hat{i} - 8\hat{j}$ (in m/s^2). At time t = 0, the particle is at point having coordinates (0, 20 metre) and its initial velocity is $\vec{u} = -12\hat{i} + 16\hat{j}$ (in m/s). The instant of time when speed of the particle is zero will be :

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

Q12 A particle after starting from rest, experiences constant acceleration for 20 sec. If it covers a distance s_1 in first 10 sec, then the distance covered during next 10 sec will be :

a) s_1 **b)** $2s_1$ **c)** $3s_1$ **d)** $4s_1$

Q13 V-t graph for the motion of a particle moving along a straight line is shown. Slope of the curve at point 'P' shown in the graph is correctly represented by :

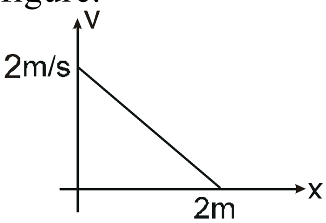


a) $-1\ m/s^2$ **b)** $\tan 45°$ **c)** $\tan 15°$ **d)** $\frac{3\pi}{4}$

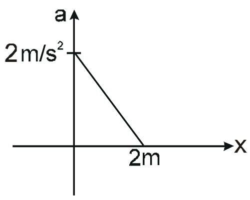
Q14 A point initially at rest moves along x-axis. Its acceleration varies with time as $a = (6t + 5)\ m/s^2$. If it starts from origin, the distance covered in 2 s is.

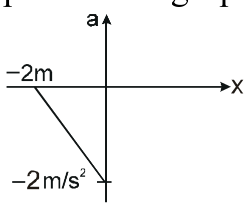
a) 20 m **b)** 18 m **c)** 16 m **d)** 25 m

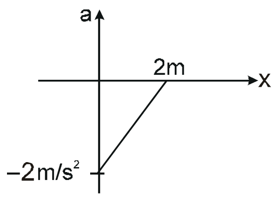
Q15 The velocity displacement graph of a particle moving along a straight line is shown in figure.

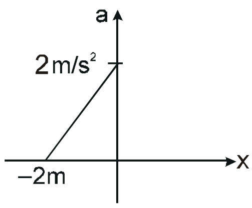


Then the acceleration displacement graph is

a)


b)


c)


d)


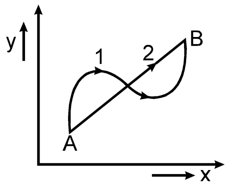
Q16 Two trains A & B 100 km apart are travelling towards each other on different tracks with starting speed of 50 km/h for both. The train A accelerates at $20\ km/h^2$ and the train B retards at the rate $20\ km/h^2$. The distance covered by the train A when they cross each other is :

a) 45 km **b)** 55 km **c)** 65 km **d)** 60 km

Q17 A ship is travelling due east at 10 km/h. A ship heading 30° east of north is always due north from the first ship. The speed of the second ship in km/h is –

a) $20\sqrt{2}$ **b)** $20\sqrt{3/2}$ **c)** 20 **d)** $20/\sqrt{2}$

Q18 A particle can travel from point A to B from two different paths 1 and 2, as shown, in same interval of time. Then which of the following is incorrect?



a) Average velocity along the two paths A to B are equal

b) The particle may travel along both the paths unaccelerated

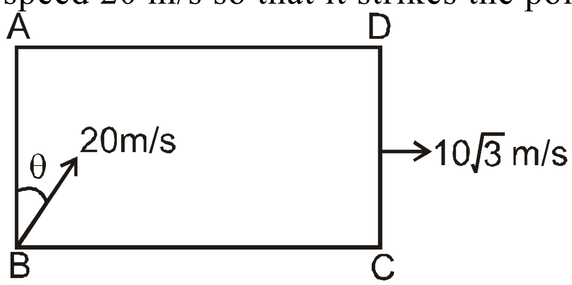
c) The direction of instantaneous velocity along the path 1 & 2 can be same for a maximum of two point on the paths.

d) Along path 1 the average and instantaneous velocity can have same direction at some instant

Q19 A tiger running 100 m race, accelerates for one third time of the total time and then moves with uniform speed. Then the total time taken by the tiger to run 100 m if the acceleration of the tiger is $8 m/s^2$ is :

a) $3\sqrt{5}s$ **b)** $5\sqrt{3}s$ **c)** 12 s **d)** 9 s

Q20 In given figure, a smooth square platform ABCD is moving towards right with a uniform speed $10\sqrt{3}$ m/s. At what angle θ must a particle be projected from B with speed 20 m/s so that it strikes the point A?



a) 60^o **b)** $\cos^{-1}\left(\frac{2}{\sqrt{3}}\right)$ **c)** 30^o **d)** $\sin^{-1}\left(\frac{2}{\sqrt{3}}\right)$

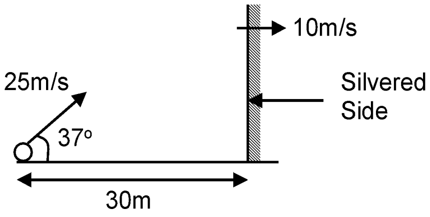
Numerical

Q21 On a particular day, wind offers a horizontal acceleration $7.5 m/s^2$. A particle is projected at a speed of 10 m/s at $\theta = 37°$ with the vertical against the wind. Find the distance (in meter) from the point of projection where the particle will strike the horizontal ground. $\tan 37° = \frac{3}{4}$ and $g = 10.0 m/s^2$

Q22 A body travels a distance of 20 m in the 7th second and 24 m in 9th second. Distance traveled (in m) by it in the 15th second is:

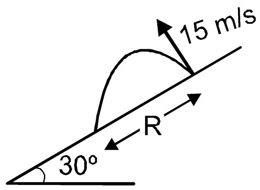
Q23 The distance travelled (in m) by a particle starting from rest and moving with an acceleration $\frac{4}{3}$ ms^{-2}, in the third second is (answer to be round off to nearest integer)

Q24 A particle is projected from ground with 25 m/s at 37^{o} with horizontal. A vertical plane mirror initial at a distance 30m from point of projection is moving away from point of projection with 10 m/s. Find the relative separation (in m) between particle and its image in plane mirror at t equal to 2sec .



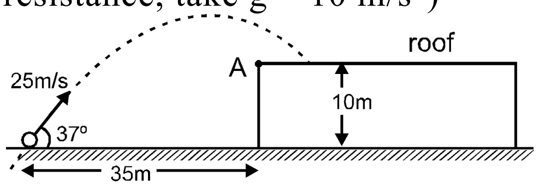
Q25 A stone is projected from level ground such that its horizontal and vertical components of initial velocity are $u_x = 10$ m/s and $u_y = 20$ m/s respectively. Then the angle between velocity vector of stone one second before and one second after it attains maximum height is :

Q26 A particle is projected up with 15 m/s perpendicular to the incline. (see fig.). If the particle hits the incline at a distance R (in meter) from the point of projection then find the value of $\frac{R}{5}$? (g = 10 m/s^2)



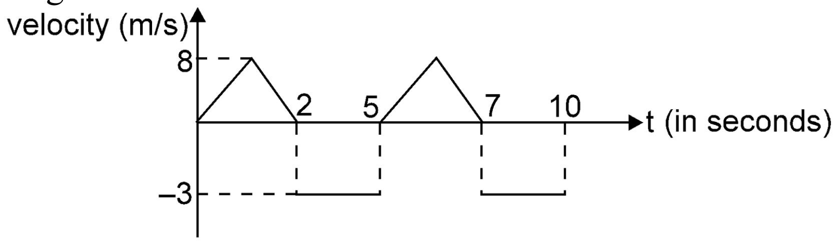
Q27 A particle is projected from ground with an initial velocity 20 m/sec making an angle 60° with horizontal. If R_1 and R_2 are radius of curvatures of the particle at point of projection and highest point respectively, then find the value of $\frac{R_1}{R_2}$.

Q28 A ball is at 35 m horizontal distance from the foot of 10m high building as shown in figure. The ball is projected with a velocity of 25 m/s at an angle of 37^{o} with horizontal. At how much distance (in meters) from the corner point A, will the ball hit the roof ? (Assume that roof is sufficiently large so that ball lands on it. Neglect air resistance, take g = 10 m/s^2)



Q29 The velocity of a particle is given by $\overrightarrow{v} = 2\hat{i} - \hat{j} + 2\hat{k}$ in m/s for time interval t = 0 to t = 10 sec. Find the distance travelled by the particle in given time interval.

Q30 A particle moves along X axis. At t = 0 it was at x = – 1. It’s velocity varies with time as shown in the figure. Find the number of times the particle passes through the origin.



Chemistry

Single Choice Question

Q31 1 g silver salt of an organic dibasic acid on heating yields 0. 5934 g Ag. If the weight percentage of C in acid is 8 times the weight percentage of hydrogen and one half the weight percentage of oxygen, then determine its molecular formula. ($M_{Ag}NO_3 = 108$)

a) $C_4H_6O_6$ **b)** $C_3H_4O_6$ **c)** $C_4H_3O_3$ **d)** $C_4H_6O_3$

Q32 If the density of methanol is 0.80 kg L^{-1}. What is the volume needed for making 2.5 L of its 0.25 M solution ?

a) 26 ml **b)** 27.3 ml **c)** 25.0 ml **d)** 33.3 ml

Q33 A mixture containing 28 g CaO and 20 g NaOH is treated with aqueous HC1 until the reactions complete. The resulting solution is evaporated to dryness. What is the mass of the solid obtained?

a) 169. 50 g **b)** 84.75g **c)** 42.37g **d)** 100. Og

Q34 Which of the following is independent of temperature?
(a) Molality (b) Molarity (c) Mole fraction (d) weight percentage

a) (a) and (b) **b)** (a), (b) and (c) **c)** (a), (c) and (d) **d)** (b), (c) and (d)

Q35 25.4 g of iodine and 14. 2 g chlorine react to give a mixture of ICI and ICl_3. How many moles of ICI and ICl_3 are formed, respectively?

a) 0.05, 0.05 **b)** 0.1, 0.05 **c)** 0.5, 0.5 **d)** 0.1, 0.1

Q36 Which of the following sample must have average molar mass greater than that of a mixture of N_2 and CO_2?

a) Mixture of H_2 and SO_3 **b)** Mixture of CH_4 & SO_3 **c)** Mixture of SO_2 and SO_3

d) None of these

Q37 In the reaction
$ClO_3^-(aq) + 5Cl^-(aq) + 6H^+(aq) \longrightarrow 3Cl_2(g) + 3H_2O(l)$
the oxidizing and reducing agents are, respectively :

a) $Cl^-(aq)$ and $ClO_3^-(aq)$ **b)** $ClO_3^-(aq)$ and $Cl^-(aq)$ **c)** $ClO_3^-(aq)$ and $H^+(aq)$

d) $Cl^-(aq)$ and $H^+(aq)$

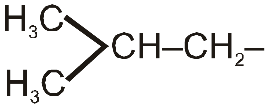
Q38 When 400 g of a 20% solution by weight was cooled, 50 gm of solute precipitated. The percentage concentration of remaining solution is :

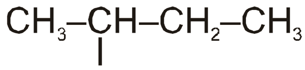
a) 8.57% **b)** 9.5% **c)** 15% **d)** 12.25%

Q39 Average oxidation number of sulphur is greater than two in :

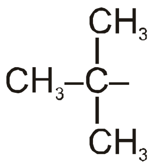
a) $Na_2S_2O_3$ **b)** $Na_2S_4O_6$ **c)** Na_2S **d)** S_8

Q40 The structure of isobutyl group in an organic compound is :

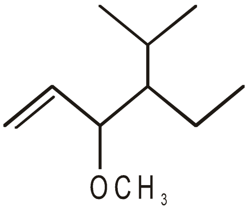
a) 

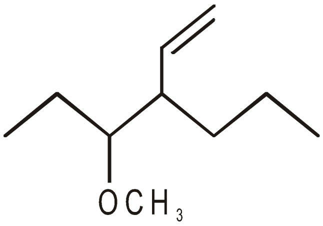
b) 

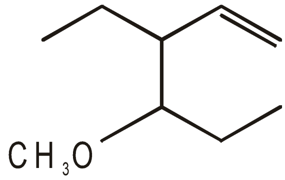
c) $CH_3–CH_2–CH_2–CH_2–$

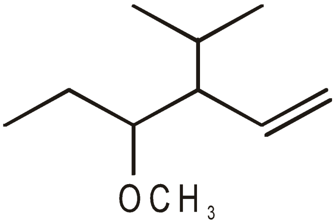
d) 

Q41 Structure of 4-Methoxy-3-propylhex-1-ene is:

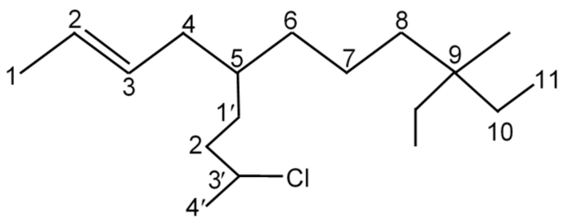
a) 

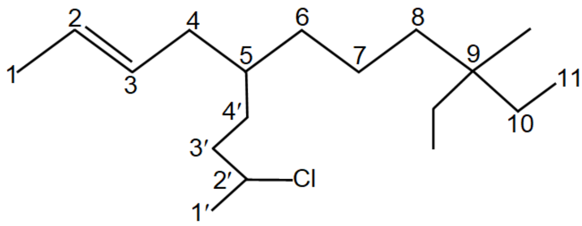
b) 

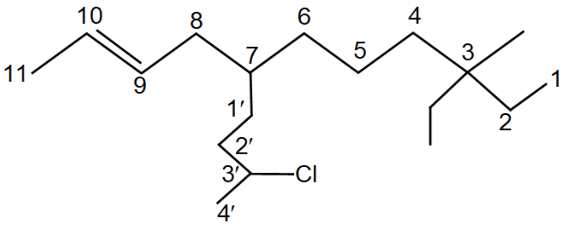
c) 

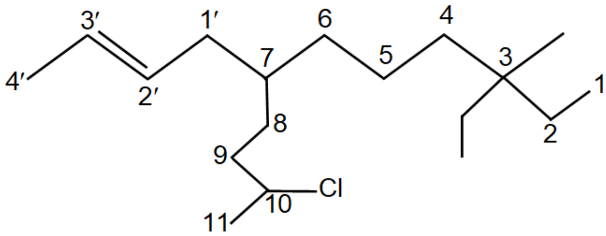
d) 

Q42 Correct numbering of parent chain and branch is in

a) 

b) 

c) 

d) 

Q43 Which of the following IUPAC name needs correction ?

a) 3-Bromo-5-methylcyclohex-1-ene

b) 6-Bromocyclohexa-1,4-diene

c) 4-Methoxy-2-nitrohexane

d) Benzene-1,4-dicarboxylic acid

Q44 IUPAC name of the following compound is :
$CH_3–CH(C_2H_5)–CH(OH)–CH(Br)–CH_2–CH_3$

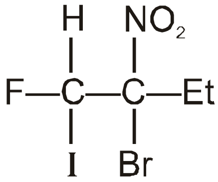
a) 3-Bromo-5-methylheptan-4-ol

b) 4-Bromo-2-ethylhexan-3-ol

c) 3-Bromo-5-ethylhexan-4-ol

d) 5-Bromo-3-methylheptan-4-ol

Q45 The correct IUPAC name of the following compound is :



a) 1-Bromo-1-ethyl-2-fluoro-2-iodo-1-nitroethane.

b) 3-Bromo-4-fluoro-4-iodo-3-nitrobutane.

c) 2-Bromo-1-fluoro-1-iodo-2-nitrobutane.

d) 1-Fluoro-1-iodo-2-bromo-2-ethyl-2-nitroethane.

Q46 Density of a 2.05M solution of acetic acid in water is 1.02 g/ml. The molality of the solution is :

a) 1.14 mol kg^{-1} **b)** 3.28 mol kg^{-1} **c)** 2.28 mol kg^{-1} **d)** 0.44 mol kg^{-1}

Q47 In the reaction $2AI_{(s)} + 6HCl_{(aq)} \rightarrow 2Al^{3+}{}_{(aq)} + 6Cl^{-}{}_{(aq)} + 3H_2\ (g)$

a) 6L $HCl_{(aq)}$ is consumed for every 3L H_2 produced.

b) 33.6 L $H_{2(g)}$ is produced regardless temperature and pressure for every moles that reacts.

c) 67.2 L $H_{2(g)}$ at STP is produced for every mole of Al that reacts.

d) 11.2 L $H_{2(g)}$ at STP is produced for every mole of $HCl_{(aq)}$ consumed.

Q48 The density (in g mL^{-1}) of a 3.60 M sulphuric acid solution that is 29% (H_2SO_4 molar mass = 98 g mol^{-1}) by mass will be

a) 1.22 **b)** 1.45 **c)** 1.64 **d)** 1.88

Q49 In which of the following reactions H_2O_2 acts as a reducing agent ?

(a) $H_2O_2 + 2H^+ + 2e^- \rightarrow 2H_2O$

(b) $H_2O_2 - 2e^- \rightarrow O_2 + 2H^+$

(c) $H_2O_2 + 2e^- \rightarrow 2OH^-$

(d) $H_2O_2 + 2OH^- - 2e^- \rightarrow O_2 + 2H_2O$

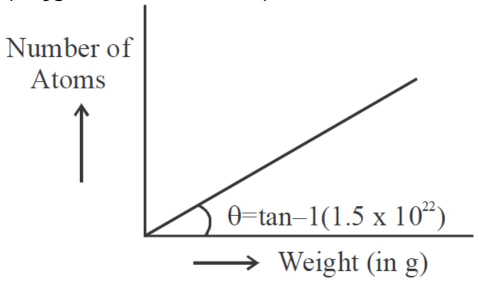
a) (a), (b) **b)** (c), (d) **c)** (a), (c) **d)** (b), (d)

Q50 Chlorophyll contains 2.70% of magnesium by weight. The number of magnesium atoms in 2 gm of chlorophyll is :

a) 1.35×10^{21} **b)** 2.86×10^{21} **c)** 3.35×10^{19} **d)** 6.023×10^{23}

Numerical

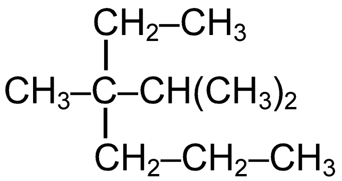
Q51 A graph is plotted for different samples of an element, by taking its weight (in gram) on X-axis and number of atoms present on Y-axis. The atomic weight of element (in u) is :
($N_A = 6.0 \times 10^{23}$)



Q52 The no. of molecules present in a drop of water with volume 0.06 cm^3 having density 1 g/cm^3 is approximately $x \times 10^{21}$. Value of x is :

Q53 The total cationic charge present in 51 gm of Al_2O_3 is x Faraday. x is :

Q54 The number of substituents are present on parent chain of given compound



Q55 Find the molecular mass of first member of homologous series of ester family.

Q56 If an atom of an element B contain equal no. of protons and neutrons. Its atomic number (Z) and mass number (A) are related as 2A + 3Z = 140 then the total number of nucleons present in one atom of element is :

Q57 500 mL, 0.2 M Na_2SO_4 solution is mixed with 100 mL, 17.1% (w/v) $Al_2(SO_4)_3$ solution and resulting solution is diluted to 5 times. Find the molarity of SO_4^{2-} ions in the final solution. If your answer is X M then what will be the value of 12X. (Report your answer in terms of nearest integer)
[Atomic mass of A1 = 27, S = 32 , Na = 23]

Q58 $FeSO_4$ undergoes decomposition as
$FeSO_4(s) \longrightarrow Fe_2O_3(s) + SO_2(g) + SO_3(g)$
At high temperature, If 7.6 g $FeSO_4$ is taken then :
The average molar mass of the gaseous mixture (which is obtained after reaction) is :

Q59 Identify degree of unsaturation $C_{13}H_{17}O_3NCl_2$:

Q60 The molarity of the solution prepared by dissolving 6.3 g of oxalic acid ($H_2C_2O_4.2H_2O$) in 250 mL of water in mol L^{-1} is $x \times 10^{-2}$. The value of x is ________. (Nearest integer)
[Atomic mass : H : 1.0, C : 12.0, O : 16.0]

Mathematics

Single Choice Question

Q61 If $A \subseteq B$, then B' – A' is equal to

a) A' b) B' c) A d) ϕ

Q62 Which of the following is true?

a) $\{2, 3\} \in \{1, 2, 3, 4\}$ b) $\{1,2, 3\} \subseteq \{\{1, 2, 3\}, 4,5,6\}$ c) $\{\{1\}\} \in \{\{1\}, 2, 3, 4\}$
d) $\{\{1, 2\}\} \subseteq \{\{1, 2\}, 3, 4\}$

Q63 If A and B are two sets, then $A \cap (A \cup B)'$ is equal to

a) A b) B c) ϕ d) None of these

Q64 For any two sets A and B which of the following is pair wise disjoint family of sets

a) $A\cap B$, A – B, $A\cup B$ b) $A\cap B$, B – A, $A\cup B$ c) A – B, $A\cap B$, B – A
d) None of these

Q65 The solution of the inequality $(x^2 - 3x + 2)(x^3 - 3x^2)(4 - x^2) \geq 0$ is

a) $x \in (-\infty, -2) \cup (2, 3)$ b) $x \in (-\infty, -2)$ c) $x \in (-\infty, -2] \cup \{0\} \cup [1, 3]$
d) $x \in (-2, 1] \cup [3, \infty) \cup \{2\}$

Q66 Solution set of inequality $\frac{(e^x-1)(2x-3)(x^2+x+2)}{(\sin x-2)(x+1)^2 x} \leq 0$ is

a) $x \in \left(-\infty, \frac{3}{2}\right]$ b) $x \in (-\infty, -1) \cup \left[\frac{3}{2}, \infty\right)$ c) $x \in (-1, 0) \cup \left[\frac{3}{2}, \infty\right)$ d) $x \in \left[\frac{3}{2}, \infty\right)$

Q67 Least natural number satisfying the in equation $\frac{x^2-x-6}{x^2+6x} \geq 0$ is

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

Q68 Solution set of the in equation $\frac{1}{x^2+x+1} \geq -10$ is

a) $(-1, 0) \cup (1, \infty)$ b) $(-\infty, \infty)$ c) $(-1, 0) \cup (1, 2)$ d) $(-\infty, 0) \cup (0, \infty)$

Q69 Which of the following sets satisfy, $\frac{14x}{x+1} < \frac{9x-30}{x-4}$?

a) [0, 2) b) (4, 7] c) [5, 6) d) [2, 4)

Q70 The complete solution set of the inequality $\frac{x^4-3x^3+2x^2}{x^3-x^2-30x} \geq 0$ is

a) $(-\infty, -5) \cup (1, 2) \cup (6, \infty) \cup \{0\}$ b) $(-\infty, -5) \cup [1, 2] \cup (6, \infty) \cup \{0\}$
c) $(-\infty, -5] \cup [1, 2] \cup [6, \infty) \cup \{0\}$ d) $(-5, 0) \cup [1, 2] \cup (6, \infty)$

Q71 If $x = \sqrt{20 + \sqrt{20 + \sqrt{20 + ...\infty}}}$, then the value(s) of x is/are ..... (x > 0)

a) 5, –4 b) 4 c) 5 d) 4, –5

Q72 If $x = 3 - \sqrt{8}$, then $x^3 + \frac{1}{x^3}$ is equal to

a) 6 **b)** 198 **c)** $6\sqrt{2}$ **d)** 102

Q73 Which of the following number is irrational

a) $\sqrt{\frac{4}{9}}$ **b)** $\sqrt[3]{\frac{8}{27}}$ **c)** $\frac{7\pi}{22}$ **d)** $\pi + \sqrt{16 - 8\pi + \pi^2}$

Q74 The value of $\frac{4}{9^{1/3} - 3^{1/3} + 1}$ is equal to

a) $3^{1/3} + 1$ **b)** $3^{1/3} - 1$ **c)** $3^{1/3} + 2$ **d)** $3^{1/3} - 2$

Q75 The expression $\left[\sqrt[3]{\sqrt[6]{a^9}}\right]^4 \left[\sqrt[6]{\sqrt[3]{a^9}}\right]^4$ is simplified to

a) a^{16} **b)** a^{12} **c)** a^8 **d)** a^4

Q76 Let A and B be two sets, then $(A \cup B)' \cup (A' \cap B)$ is equal to

a) A' **b)** A **c)** B' **d)** None of these

Q77 A class has 175 students. The following data shows the number of students opting for one or more subjects. Mathematics 100; Physics 70; Chemistry 40; Mathematics and Physics 30; Mathematics and Chemistry 28; Physics and Chemistry 23; Mathematics, Physics and Chemistry 18. How many students have offered Mathematics alone?

a) 35 **b)** 48 **c)** 60 **d)** 22

Q78 The set $\{n(n + 1)(2n + 1) : n \in Z\}$ is a subset of

a) $\{6k : k \in Z\}$ **b)** $\{12k : k \in Z\}$ **c)** $\{18k : k \in Z\}$ **d)** $\{24k : k \in Z\}$

Q79 Out of all the patients in a hospital 89% are found to be suffering from heart ailment and 98% are suffering from lungs infection. If K% of them are suffering from both ailments, then K can not belong to the set :

a) {80, 83, 86, 89} **b)** {84, 86, 88, 90} **c)** {79, 81, 83, 85}

d) {84, 87, 90, 93}

Q80 Let $X = \{n \in N : 1 \leq n \leq 50\}$. If $A = \{n \in X : n$ is a multiple of $2\}$ and $B = \{n \in X : n$ is a multiple of $7\}$, then the number of elements in the smallest subset of X containing both A and B is _________.

a) 25 **b)** 27 **c)** 28 **d)** 29

Numerical

Q81 An Investigator interviewed 100 students to determine the performance of three drinks milk, coffee and tea. The investigator reported that 10 students take all three drinks, 20 students take milk and coffee, 30 students take coffee and tea; 25 students take milk and tea; 12 students take milk only. 5 students take coffee only and 8 students take tea only. Then the number of students who did not take any of the three drinks is λ. The value of $\frac{\lambda}{4}$ is equal to

Q82 The number of integral values of x satisfying $\frac{\sqrt{21-x^2-4x}}{x+1} < 1$ is

Q83 Number of integral values of x satisfying the inequality $\frac{(e^x-1)(sin\ x-2)(x^2-5x+4)}{x^2(-x^2+x-2)(2x+3)} \leq 0$ is

Q84 Find the sum of all the solutions of inequality $\frac{(x-8)^4(x-2)^5(x-1)^3(x+1)^2(x+5)^2}{x^4-2x^3-x+2} \leq 0$.

Q85 If $\frac{2x}{2x^2+5x+2} > \frac{1}{x+1}$, then complete solution set is (a, –1) ∪ (b, c). Find |a + 3b + 12c|.

Q86 An investigator interviewed 100 students to determine their preferences for the three drinks; milk (M), coffee (C) and Tea (T). He reported the following : 10 students had all the three drinks M.C.T. 20 had M and C; 30 had C and T, 25 has M and T; 12 had M only, 5 had C only and 8 had T only. Number of students did not take any of the three drinks

Q87 In a school there are 20 teachers who teach mathematics or physics. Of these, 12 teach mathematics and 4 teach both physics and mathematics, the number of teachers who teach physics are-

Q88 Number of integral value of x satisfying $\frac{(x+3)^2(x^2+x+1)}{(4-x)x} \geq 0$

Q89 The largest integral value of x which satisfies the inequality $\frac{4x+19}{x+5} < \frac{4x-17}{x-3}$ is:

Q90 The remainder when the polynomial $P(x) = x^4 - 3x^2 + 2x + 1$ is divided by $x - 1$ is

Answer Key

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	**C**	**C**	**B**	**C**	**B**	**B**	**C**	**C**	**B**	**B**
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	**B**	**C**	**A**	**B**	**C**	**D**	**C**	**B**	**A**	**A**
Que.	21	22	23	24	25	26	27	28	29	30
Ans.	**0**	**36**	**3**	**20**	**90**	**6**	**8**	**5**	**30**	**4**
Que.	31	32	33	34	35	36	37	38	39	40
Ans.	**A**	**C**	**B**	**C**	**D**	**C**	**B**	**A**	**B**	**A**
Que.	41	42	43	44	45	46	47	48	49	50
Ans.	**B**	**A**	**B**	**A**	**C**	**C**	**D**	**A**	**D**	**A**
Que.	51	52	53	54	55	56	57	58	59	60
Ans.	**40**	**2**	**3**	**3**	**60**	**40**	**1**	**72**	**5**	**20**
Que.	61	62	63	64	65	66	67	68	69	70
Ans.	**D**	**D**	**C**	**C**	**C**	**D**	**C**	**B**	**C**	**D**
Que.	71	72	73	74	75	76	77	78	79	80
Ans.	**C**	**B**	**C**	**A**	**D**	**A**	**C**	**A**	**C**	**D**
Que.	81	82	83	84	85	86	87	88	89	90
Ans.	**5**	**7**	**5**	**2**	**10**	**20**	**12**	**4**	**2**	**1**