SINCE 1984

Brilliant®

STUDY CENTRE, PALA

JEE MAIN 2026

SESSION-1
SHIFT-1 MORNING

VIDEO SOLUTION

JANUARY 23, 2026
FRIDAY

SCAN ME

MEMORY BASED QUESTIONS

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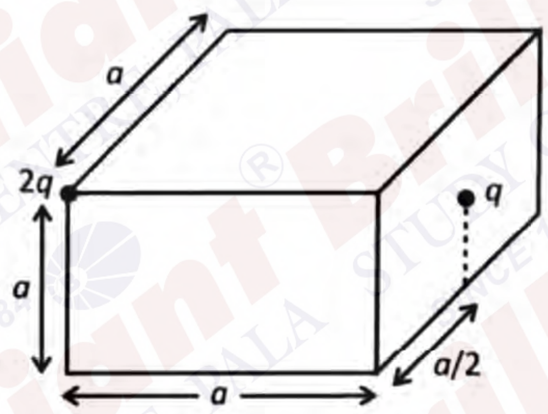
23-01-2026 SHIFT 1-MORNING

MEMORY BASED QUESTIONS

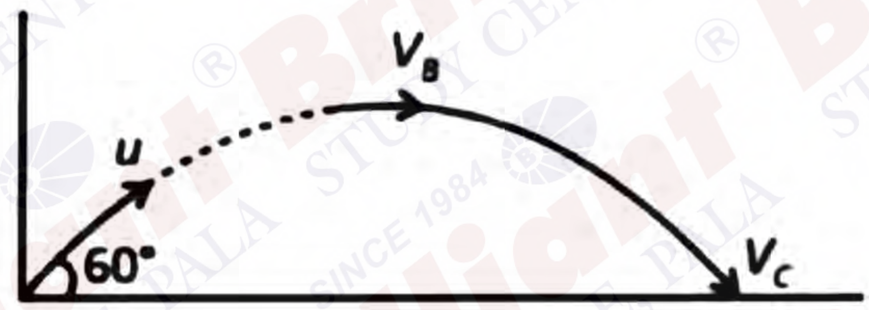
PHYSICS

QN There are two point charges, one at vertex and other at face as shown the cube. Find electric flux through the cube.



1) $3q/\varepsilon_0$ 2) q/ε_0 3) $3q/4\varepsilon_0$ 4) $5q/\varepsilon_0$

QN If a projectile is being projected with speed v at angle 60° with horizontal. Find the ratio of speed at highest point (v_B) to the speed at final point (v_C)



1) 3 : 4 2) 1 : 3 3) 1 : 2 4) 1 : 12

QN Find out the correct energy for the ground state or energy transition. (symbols has usual meaning & n → m gives the transition)

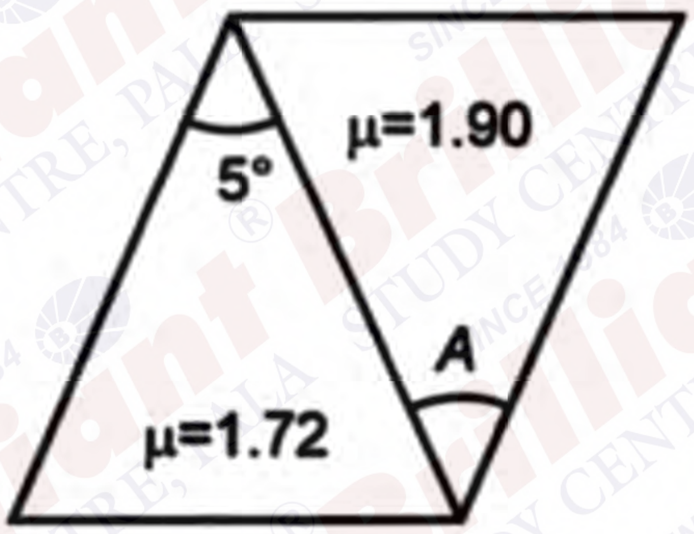
1) H (–6.8 eV) 2) Li^{2+} (–13.6 eV) 2) $He^{+}_{2\to1}(40.8\,eV)$ 4) $Be^{3+}_{2\to1}(-13.6\,eV)$

QN For the given set of measurement find relative error.

20.00, 19.75, 18.25, 17.01

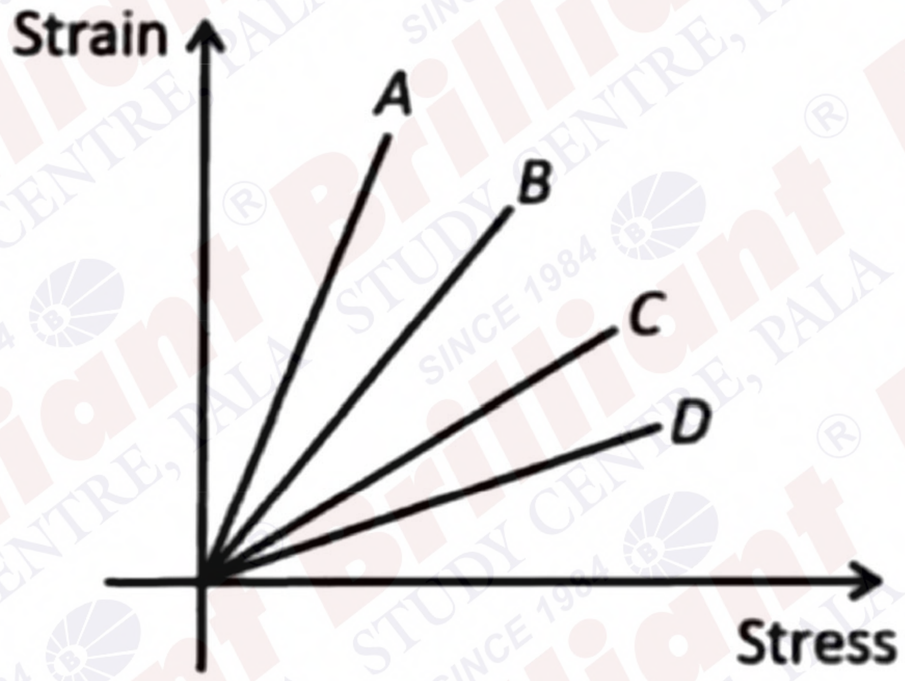
1) 0.12 2) 0.06 3) 0.09 4) 0.17

QN Find A for dispersion without deviation



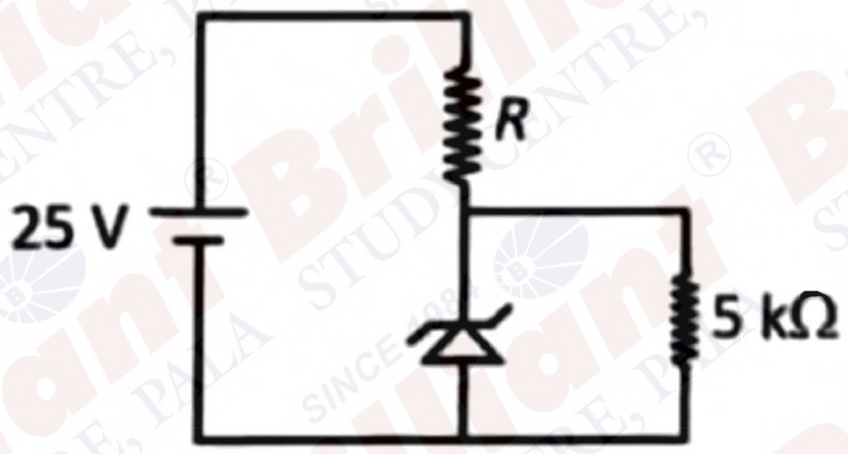
1) 3 2) 4 3) 4.5 4) 5

QN Which of the following material has bigger Young's modulus ?



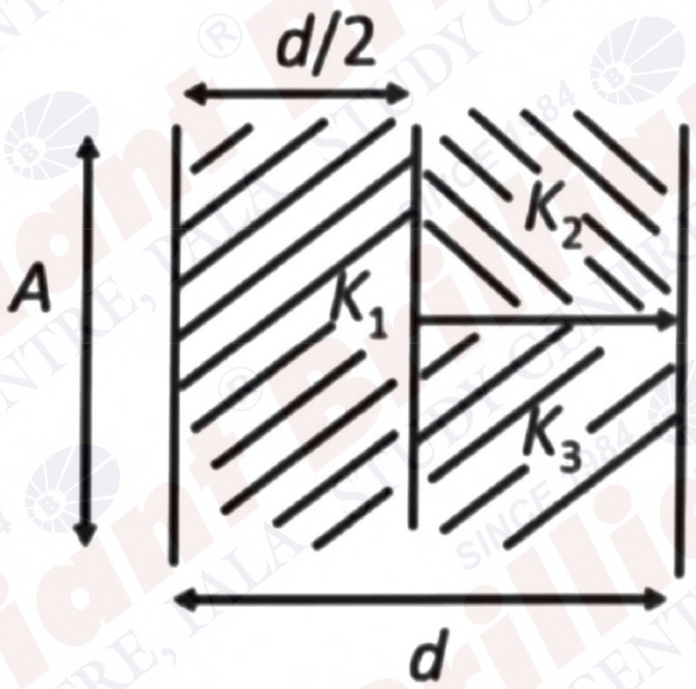
1) A 2) B 3) C 4) D

QN For the given circuit the breakdown voltage of Zener diode is $V_Z = 5$ volts. And it can with stand maximum circuit of $I_Z = 5$ mA. Find the value of R.



1) $\frac{10}{3}$ kΩ 2) 5 kΩ 3) $\frac{15}{4}$ kΩ 4) 8 kΩ

QN Find capacitance of capacitor given below if each plate has area A and separation is d between them.
$K_1 = 3 \quad K_2 = 5 \quad K_3 = 2$



1) $\frac{123\varepsilon_0 A}{40d}$ 2) $\frac{140\varepsilon_0 A}{6d}$ 3) $\frac{120\varepsilon_0 A}{30d}$ 4) $\frac{128\varepsilon_0 A}{4d}$

QN A simple pendulum of length 3 m completes 20 oscillations in 10 sec. What is length of another pendulum which completes 40 oscillations in same times

1) 0.75 m 2) 1.5 m 3) 12 m 4) 6 m

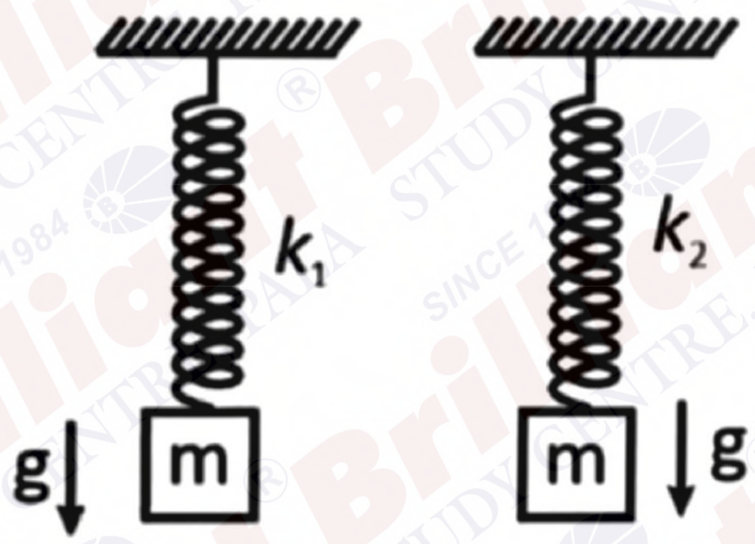
QN In two different YDSE setup for two different monochromatic wave are used but fringe width on the screen is same. If $\frac{\lambda_1}{\lambda_2}=\frac{1}{2}$ and $\frac{d_1}{d_2}=\frac{2}{1}$, then find the ratio of $\frac{D_1}{D_2}$ (all symbols are standard).

1) 1 2) 1/2 3) 2 4) 4

QN A 25 kg mass moving with 30 m/s ans another mass 15 kg of same natural moving with 10 m/s in opposite direction, collides perfectly inelastically. Find the rise in temperature of the system. (Given C = 5 ×cal/g°C & 1 cal = 4.2 J)

1) 1/50°C 2) 1/112°C 3) 1/150°C 4) 1/125°C

QN Find ratio of energy stared in the two springs as shown in figure below (2K1 = K2, 4M1= M2)

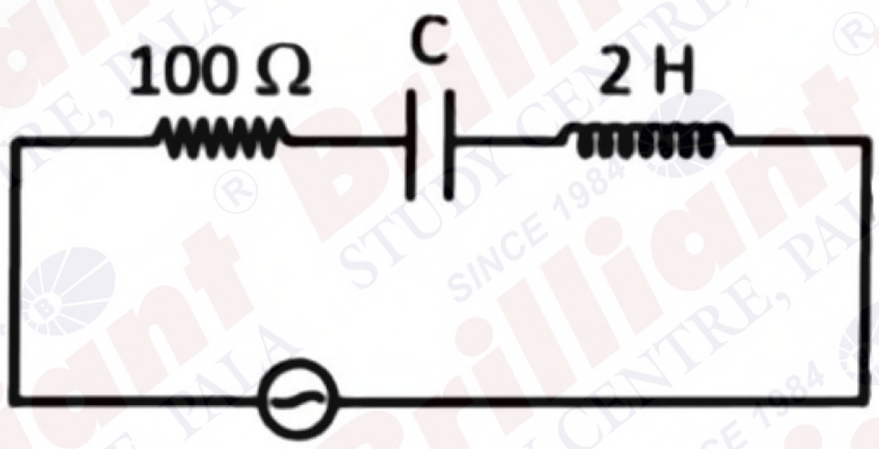


1) 1/4 2) 1/2 3) 1/8 4) 1

QN Two point particles of masses 2m and m are attached to ends of a massless rod of length *l*. Find Angular momentum of this system about an axis passing through their center of mass and perpendicular to the rod if the system is rotating with angular velocity ω about the axis.

1) $\frac{2}{3}m\omega l^2$ 2) $\frac{1}{3}m\omega l^2$ 3) $\frac{m\omega l^2}{9}$ 4) $m\omega l^2$

QN The peak current in given LCR series AC circuit shown is 5 mA, then capacitance in μF is nearly.

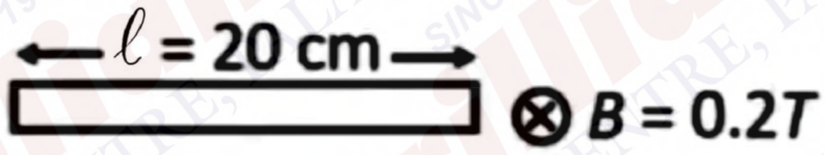


1) 1 2) 3 3) 4 4) 5

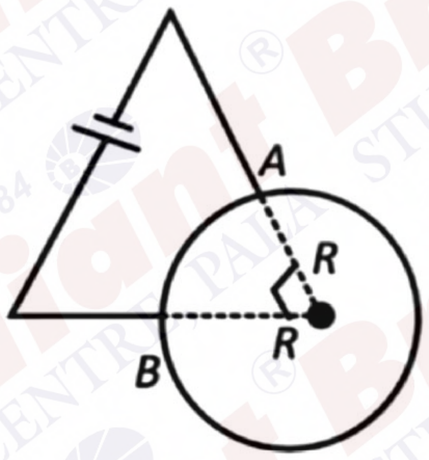
QN Two median of refractive indices n_1 & n_2 have plane interface. Speed of light in 1st is 2.4×10^8 m/s & in 2nd is 2.8×10^8 m/s. Find critical angle of incidence when light travels from 1st to 2nd.

1) $\sin^{-1}\left(\frac{6}{7}\right)$ 2) $\sin^{-1}\left(\frac{7}{8}\right)$ 3) $\sin^{-1}\left(\frac{8}{9}\right)$ 4) $\tan^{-1}\left(\frac{9}{8}\right)$

QN Find emf induced in rod after it has fallen through 2000 m under gravity in volt.



QN A uniform wire is beat into the shape of a circle of radius R has resistance per unit length = λ. A battery is connected across point A and B which subtends an angle of 90° at its centre as shown. Find the equivalent resistance of this circuit.



1) $\frac{3\pi}{4}\lambda R$ 2) $\frac{\pi}{2}\lambda R$ 3) $\frac{3\pi}{8}\lambda R$ 4) $\frac{\pi}{4}\lambda R$

QN A square frame is formed by joining four identical solid cylinders _____ as its sides. Each cylinder has length L, mass M, and radius R. Find the moment of inertia of the frame about the axis lying in the plane of the frame and joining the centers of two opposite cylinders.

1) $I = \frac{2}{3}ML^2 + \frac{3}{2}MR^2$ 2) $I = \frac{1}{3}ML^2 + \frac{3}{2}MR^2$

3) $I = \frac{2}{3}ML^2 + \frac{1}{2}MR^2$ 4) $I = \frac{1}{3}ML^2 + \frac{1}{2}MR^2$

QN A bob of mass *m* is released as shown when it was making 60° with the vertical. Another identical mass 'm' kept at rest. Elastic collision occurs. Find R for completing circle

QN Statement-I : Sublimation is a purification technique that is used to separate those solid substances which changes from solid to vapour state without passing through liquid state.

Statment-II : If external atmospheric pressure is reduced, then boiling point of substance is decreased

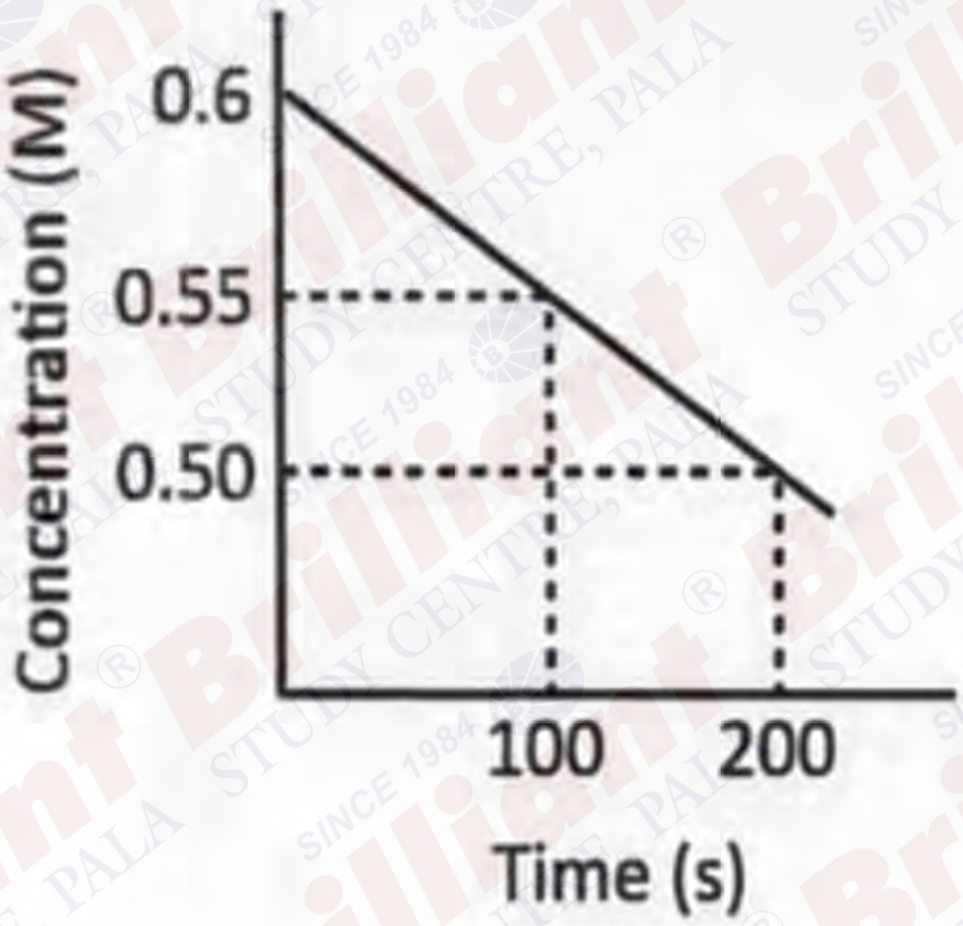
1) Both statement-I and statement-II are correct

2) Both statement-I and statement-II are incorrect

3) Statement-I is correct and statement-II is incorrect

4) Statement-I is incorrect and statement-II is correct

QN Consider the following graph of concentration vs time



Find half-life fo reaction

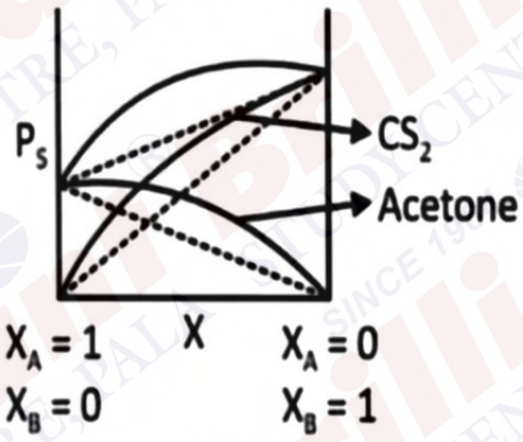
1) 600 s

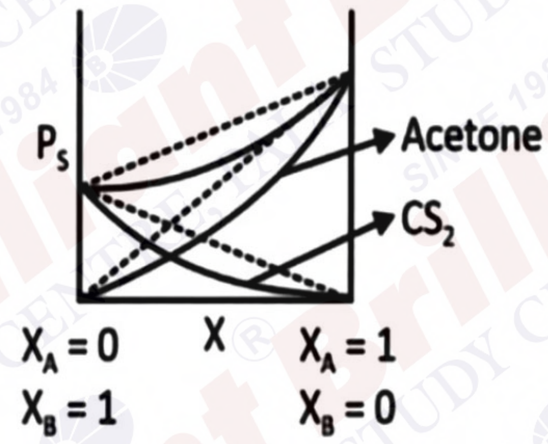
2) 200 s

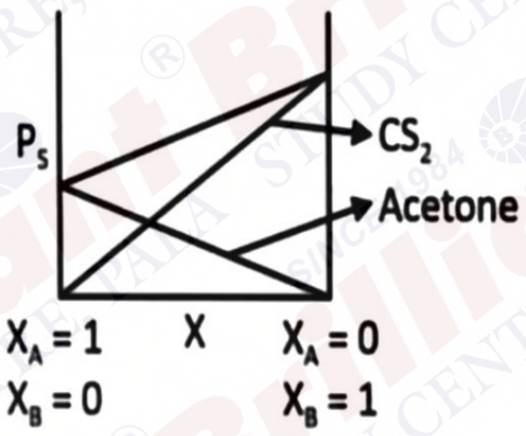
3) 300 s

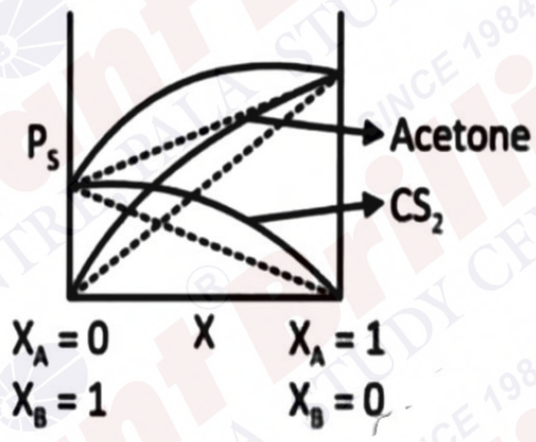
4) 100 s

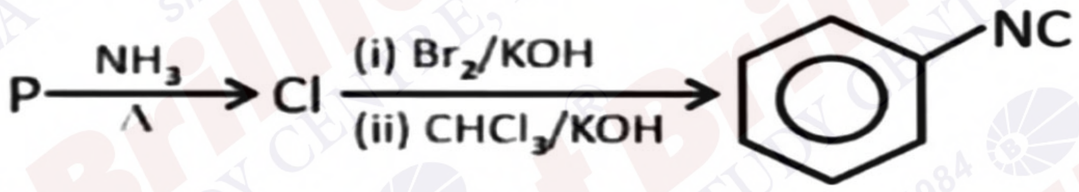
QN A binary solution is formed by mixing acetone (A) and CS_2(B). The variation of vapour pressurevs moel fraction will be

1) 

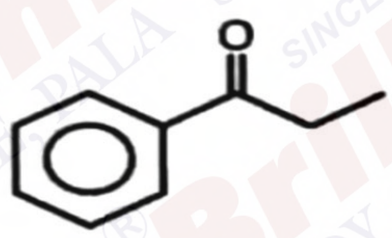
2) 

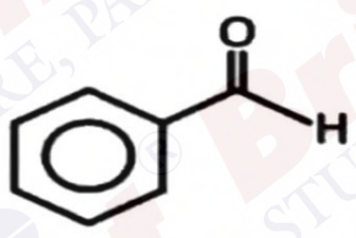
3) 

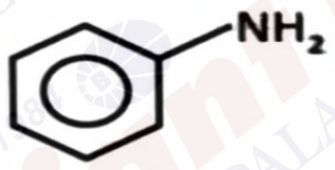
4) 

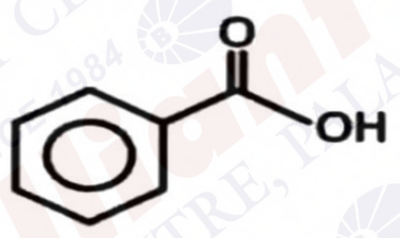
QN Consider the following reaction : 

The structure of 'P' is

1) 

2) 

3) 

4) 

QN Consider the two complexes

I) $[Cr(OX)_3]^{3-}$ II) $[Co(OX)_3]^{3-}$

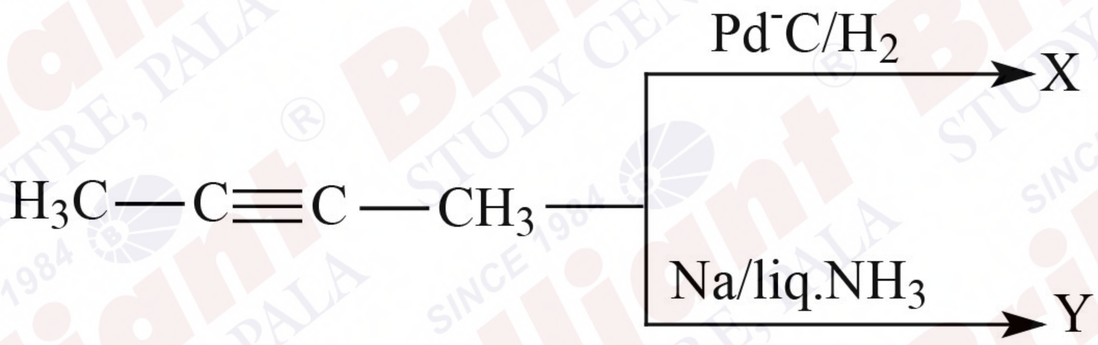
Find the ratio of CFSE of I to II complex (neglect pairing energy and consider Δ_0 for both complexes to be x)

1) 2 2) 1/2 3) 1/3 4) 2/3

QN Which of the following undergo nitration at fastest rate?

1) $C_6H_5NO_2$ 2) $C_6H_5CH_3$ 3) C_6H_5COOH 4) C_6H_5Br

QN



1) Both X and Y are stereoisomer

2) Boiling point of X is lesser than Y

3) Dipole moment of X is zero

4) They give same product on ozonolysis

QN For the following change, $H_2O_{(\ell)} \xrightarrow[5°C]{} H_2O_{(g)}$. Select the correct answer

1) q = +ve; w = +ve ; ΔH = +ve

2) q = -ve; w = -ve ; ΔH = +ve

3) q = +ve; w = -ve ; ΔH = +ve

4) q =-ve; w = -ve ; ΔH = -ve

QN The correct order of ionisation energy of Cl, S, P, Al, Si si

1) Cl > P > S > Si > Al

2) P > Cl > S > Al > Si

3) Cl > S > P > Si > Al

4) Cl > Al > Si > P > S

QN Statement-I : $[CoBr_4]^{2-}$ absorbs lesser energy than $[CoCl_4]^{2-}$

Statement-II : $[CoCl_4]^{2-}$ has higher crystal field splitting energy then $[CoBr_4]^{2-}$

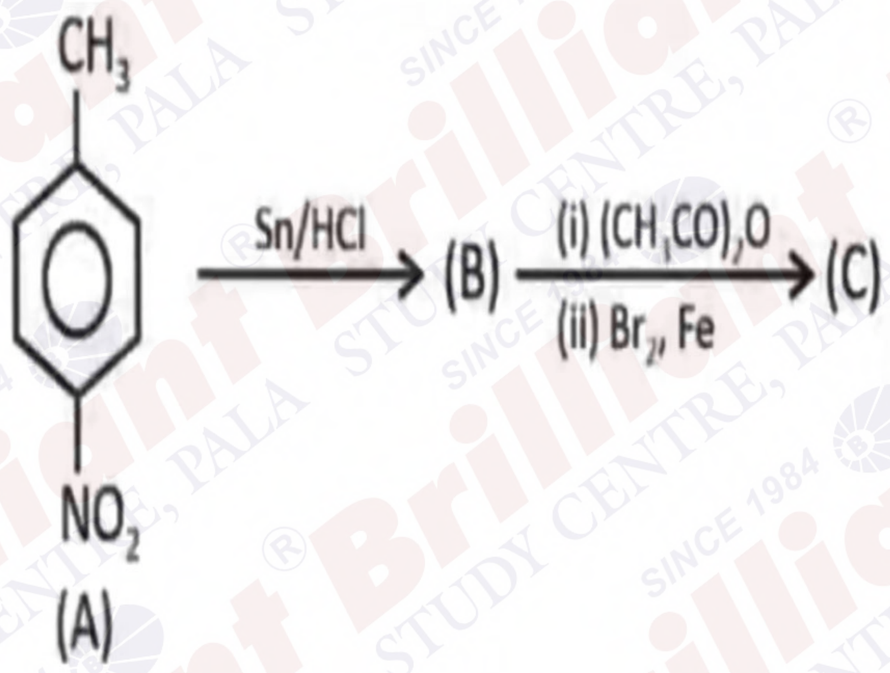
1) Both statement-I and statement-II are correct

2) Both statement-I and statement-II are incorrect

3) Statement-I is correct and statement-II is incorrect

4) Statement-I is incorrect and statement-II is correct

QN In the reaction sequence, what is the mass (in grams) of product (C) formed?

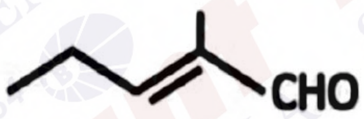


QN  $\xrightarrow[(ii)\ H_3O^+]{(i)\ Sn/HCl}$ A

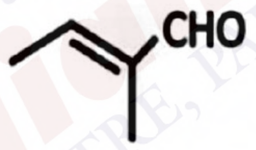
$CH_3 - CH = CH - CH_3 \xrightarrow[Zn,H_2O]{O_3}$ B

A and B are mixed and treated with dil. base to give mixture of products. Choose the incorrect product.

1) 

2) 

3) 

4) 

QN Correct statement about 13th group

A) Electronegativity decreases regularly down the graph

B) Ionic radii decreases down the graph

C) Boron has highest ionisation enegy

D) Trichloride of aluminium are covalent in nature

1) A and C only 2) C, D only 3) A, C, D only 4) B, C, D only

QN Match list-I with list-II

	List-I		List-II
A.	Bayer's unsaturation test	(I)	Violet/purple colour
B.	Cerric ammonium nitrate test of alcohols	(II)	Red colour
C.	Tollen's reagent test	(III)	Silver mirror obtained
D.	$FeCl_3$ test of phenol	(IV)	Pink colour discharge

1) A-II; B-I; C-IV; D-III 2) A-II; B-I; C-III; D-IV

3) A-IV; B-II; C-III; D-I 4) A-IV; B-III; C-II; D-I

QN Consider the given cell $Ag(s)|AgCl(s)|Cl^-(aq)|FeCl_2(aq), FeCl_3(aq)|Pt(s)$. In which of the following cases, E_{cell} will increase

1) $[Fe^{2+}]$ increases, $[Cl^-]$ increases 2) $[Fe^{2+}]$ increases, $[Cl^-]$ decreases

3) $[Fe^{3+}]$ and $[Cl^-]$ increases 4) $[Fe^{2+}]$ decreases, $[Fe^{3+}]$ decreases

QN Consider the following statements and choose the correct option(s)

A) Ni^{2+} forms pink colour complex with dimethyl glyoximate ligand (dmg)

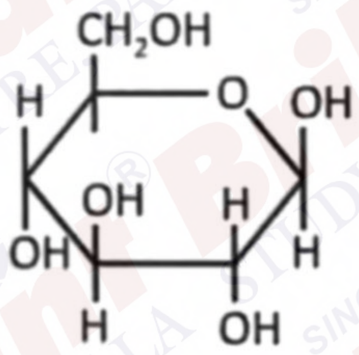
B) Ni^{2+} complex with dmg contains two ring of five membered

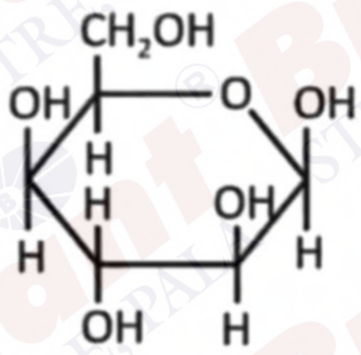
C) Ni^{2+} has 2 unpaired electron in d-orbitals in the complex

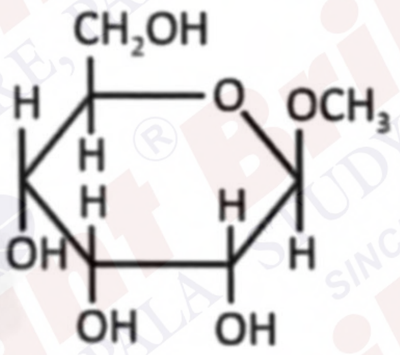
D) Ni^{2+} complex with dmg is soluble at pH = 9

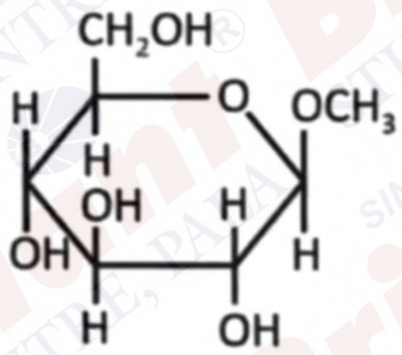
1) Only A& B 2) Only B & C 3) Only A & C 4) Only A, C and D

QN Consider the following molecules

(A) 

(B) 

(C) 

(D) 

The examples of non-reducing sugar(s) are

1) A, B only 2) A, C only 3) B, D only 4) C, D only

QN Following molecules are given: HNO_3, NF_3, H_2SO_4, O_3. Consider the molecule (T) having maximum number of lone pairs (on all atoms). The bond angle $(\angle XMX)$, where M is central atom in T is

1) 110° 2) 97° 3) 102° 4) 115°

QN Match the list-I with list-II and choose the correct option

	List-I		List-II
(a)	2nd orbit of He^+ ion	(i)	-1.96×10^{-17} J
(b)	3rd orbit of H-atom	(ii)	-2.42×10^{-19} J
(c)	1st orbit of Li^{2+} ion	(iii)	-2.178×10^{-18} J
(d)	2nd orbit of Li^{2+} ion	(iv)	-4.9×10^{-18} J

1) a-III; b-II; c-I; d-IV 2) a-III; b-II; c-IV; d-I

3) a-IV; b-III; c-II; d-I 4) a-I; b-II; c-III; d-IV

QN $C_5H_{11}Br$ reacts with aq. KOH without rearrangement. How may optically active compounds are formed

QN xg of pure Cl_2 is reacted with $Ba(OH)_2$ to form $Ba(ClO_3)_2.Ba(OH)_2$ concentration is 1M and volume is 25 mL. Find x

23-01-2026 SHIFT 1-MORNING

MEMORY BASED QUESTIONS

MATHEMATICS

QN The value of $\frac{{}^{100}C_{50}}{51}+\frac{{}^{100}C_{51}}{52}+.....+\frac{{}^{100}C_{100}}{101}$ is

1) $\frac{2^{100}}{100}$ 2) $\frac{2^{101}}{101}$ 3) $\frac{2^{100}}{101}$ 4) $\frac{2^{101}}{100}$

QN The number of solutions of $13\cos 2\theta+8\cos\theta-3\sqrt{3}=0$ if $\theta\in[-3\pi,2\pi]$ is

1) 4 2) 3 3) 0 4) 5

QN If coefficient of x,x^2 and x^3 are in arithmetic progression of the binomial expansion of $(1+x^2)^2(1+x)^n, n\in N$. Then sum of all values of 'n' is

QN Let $f(x)=\int\frac{e^x(2-x^2)}{\sqrt{1+x(1-x)^{\frac{3}{2}}}}dx$, with f(0)=0, then $f\left(\frac{1}{2}\right)$ is

1) $\sqrt{2e}+1$ 2) $\sqrt{2e}-1$ 3) $\sqrt{3e}+1$ 4) $\sqrt{3e}-1$

QN $\int_{\frac{\pi}{24}}^{\frac{5\pi}{24}}\frac{dx}{1+\sqrt[3]{\tan x}}dx=$

QN Find the area bounded by $y=\max\{\sin x,\cos x\}$ where $x\in\left[0,\frac{3\pi}{2}\right]$ with x-axis

1) 3 2) 3π 3) 4π 4) 4

QN If $S=\{1,2,3,.....,100\}$. Select two different numbers m and n such that $n-m\geq 10$ having probability $\frac{a}{b}$. Find a+b where a and b are co-prime

QN A rectangle informed by lines x = 0, y = 0 x = 3 and y = 4. A line $\perp^r$ to 3x+4y+6=0 divides the rectangle in to two equal parts then distance of the line from $\left(-1,\frac{3}{2}\right)$ is

QN For the differential equations $x^4dy+\left(4x^3y+\sin x\right)dx=0$, it is given that $y\left(\frac{\pi}{2}\right)=0$. Then the value of $x^4y\left(\frac{\pi}{3}\right)$ is equal to

1) $\frac{9}{2}$ 2) $\frac{81}{2}$ 3) $\frac{27}{2}$ 4) $\frac{243}{2}$

QN For given vectors $\vec{a}=-\hat{i}+\hat{j}+2\hat{k}$ and $\vec{b}=2\hat{i}-\hat{j}+\hat{k}$ where $\vec{c}=\vec{a}\times\vec{b}$ and $\vec{d}=\vec{c}\times\vec{b}$. Then the value of $\left(\vec{a}-\vec{b}\right).\vec{d}$ is

1) –35 2) 53 3) –52 4) 25

QN Number of 4 letters words with or without meaning formed from the letters of the word PQRSSSTTUVV is

1) 1232 2) 1400 3) 1422 4) 1162

QN Let $A=\{-2,-1,0,1,2,3,4\}$ and R be a relation such that

$R=\{(x,y):2x+y\le -2, x\in A, y\in A\}$

Let ℓ = number of elements in R, m = minimum number of elements to be added in R to make it reflexive, n = minimum number of elements to be added in R to make it symmetric, then $(\ell+m+n)$ is

QN If A is matrix of order 3 and $x=\left|3adj\left(A^2\right).adj(2A)\right|$ and $|A|=6$ and $x=2^n\times 3^m$ then m+n is

1) 21 2) 25 3) 27 4) 19

QN If point B and C lies on the line $\frac{x}{1}=\frac{1-y}{-2}=\frac{z-2}{3}$ and point A is (1,6,3). If BC = 10, then the area of ΔABC is

1) $2\sqrt{13}$ 2) $5\sqrt{13}$ 3) $6\sqrt{13}$ 4) $4\sqrt{13}$

QN Let the domain of $f(x)=\log_3\log_5\log_7\left(9x-x^2-13\right)$ is (m,n). Let $\frac{n}{3}$ and $\frac{3m}{8}$ be eccentricity and length of latus rectum of hyperbola $\frac{x^2}{a^2}-\frac{y^2}{b^2}=1$ respectively, then the value of $\left(\frac{a+b^2}{a-b^2}\right)$ is equal to

1) 7 2) 9 3) 3 4) 13

QN $3 \le \left|2z-(3+3i)\right| \le 7$. Then find minimum value of $\left|z+\frac{1}{2}(5+3i)\right|$

QN Ellipse $\frac{x^2}{2}+\frac{y^2}{1}=1$, Line y-x=1 intersects at two points A and B. Find the angle subtended by points A and B at centre of the Ellipse

QN The mean and variance of the 8 observations –10,–7,–1,x,y, 16,2,9 are $\frac{7}{2}$ and $\frac{293}{4}$ respectively. Then the mean of $x, y, x+y+1, |x-y|$ is

QN If $\begin{vmatrix} 0 & \cos\alpha & \cos\beta \\ \cos\alpha & 0 & \cos\gamma \\ \cos\beta & \cos\gamma & 0 \end{vmatrix} = \begin{vmatrix} 1 & \cos\alpha & \cos\beta \\ \cos\alpha & 1 & \cos\gamma \\ \cos\beta & \cos\gamma & 1 \end{vmatrix}$

then value of $\cos^2\alpha+\cos^2\beta+\cos^2\gamma$ is

1) $\frac{1}{2}$ 2) 1 3) $\frac{3}{2}$ 4) $\frac{1}{4}$

QN If $(f(x))^2 = 25+\int_0^x (f(x))^2+(f'(x))^2\,dx$ find mean of $f(\log_1)+f(\log_2)+.....+....+f(\log 625)$

1) 1561 2) 1675 3) 1465 4) 1565