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STUDY CENTRE, PALA

# JEE MAIN 2026

## SESSION-1 SHIFT-2 EVENING

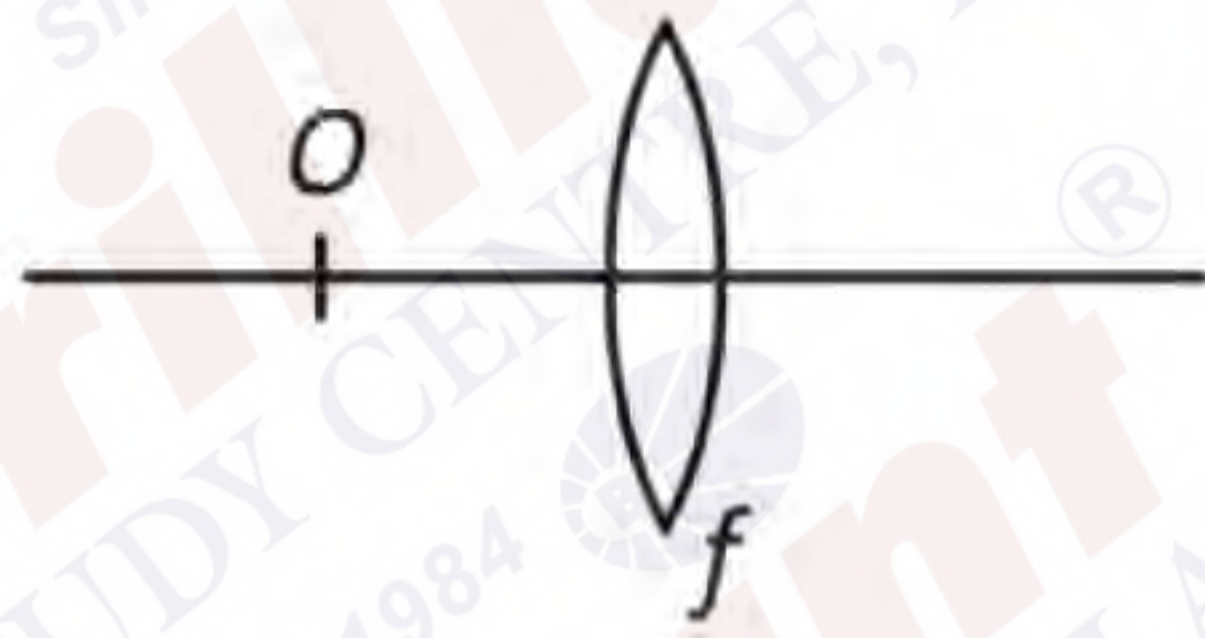


SCAN ME

### VIDEO SOLUTION JANUARY 23, 2026 FRIDAY

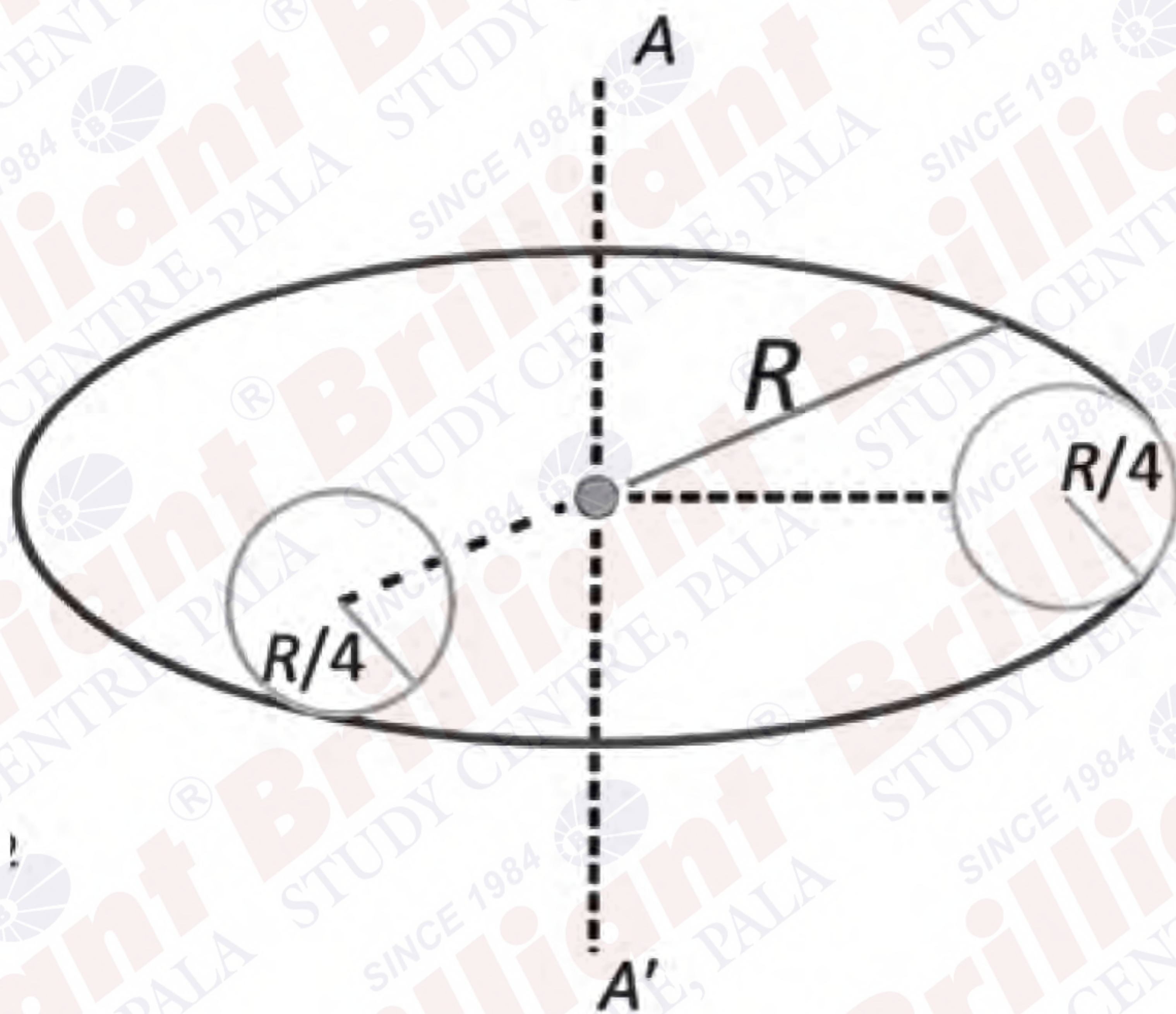
## MEMORY BASED QUESTIONS

**QN** When an object is kept at a distance 8cm and 24 cm from a convex lens magnitude of magnification is same in both cases. Find focal length of the lens.



- 1) 32cm      2) 8cm      3) 24cm      4) 16 cm

**QN**



**QN** From a uniform disc of radius  $R$  and mass  $M$  two small discs of radius  $R/4$  is being cut as shown in figure. Find the moment of inertia of the system about axis  $AA'$ .

**QN** When an unpolarized light falls at a particular angle on a glass plate (placed in air). It is observed that reflected beam is completely polarized the angle of refracted beam with respect to the normal is -----

$\tan^{-1}(1.52) = 57.3^\circ$ ; refractive index of air and glass 1.00 and 1.52

**QN** A parallel plate capacitor with plate separation 5mm is charged by a battery. On introducing a mica sheet of 2mm and maintaining the connections of the plates with the terminals of the battery, it is found that it draws 25% more charge from the battery. The dielectric constant of mica is -----

- 1) 1.0      2) 2.0      3) 1.5      4) 2.5

**QN** A metallic sphere of diameter 2 mm and density  $10.5\text{g/cm}^3$  is dropped in glycerine having viscosity 10 poise and density  $1.5\text{g/cm}^3$ . The terminal velocity attained by the sphere is ---- cm/s

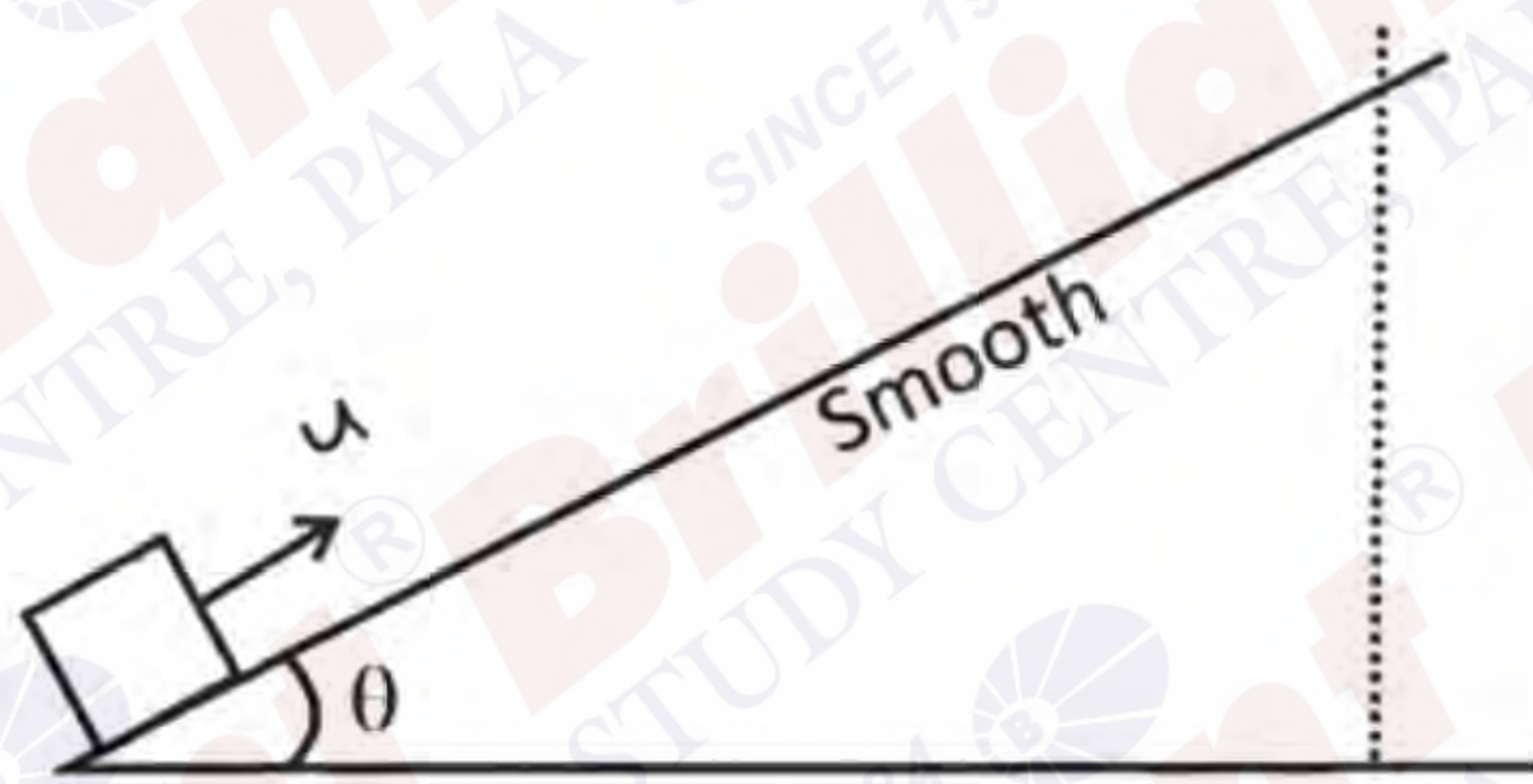
$\pi = \frac{22}{7}, g = 10\text{m/s}^2$

- 1) 2.0      2) 1.0      3) 1.5      4) 3.0

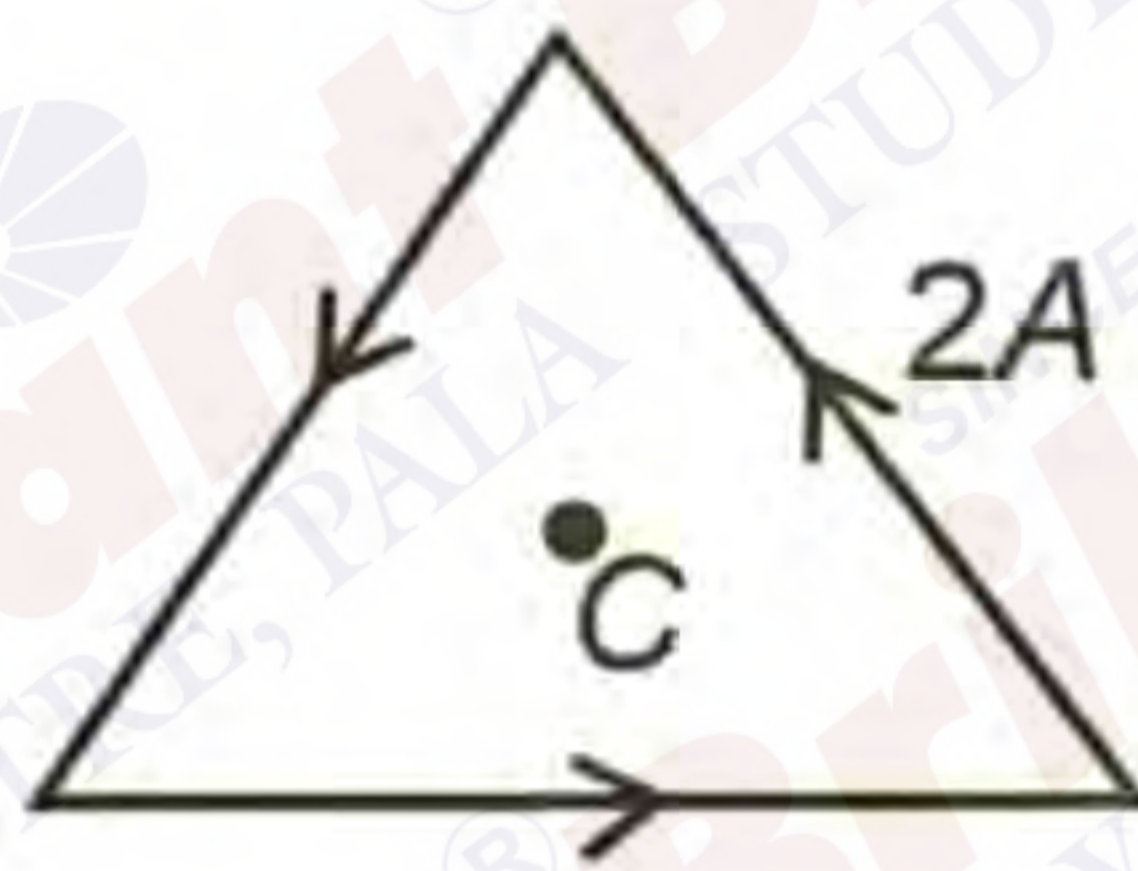
**QN** A prism of angle  $75^\circ$  and refractive index  $\sqrt{3}$  is coated with thin film of refractive index 1.5 only at the back exit surface. To get total internal reflection (TIR) at the back exit surface, the incident angle must be \_\_\_\_\_ ( $\sin 15^\circ = 0.25$ ,  $\sin 25^\circ = 0.43$ )

- a)  $\angle 15^\circ$
- b)  $15^\circ$
- c)  $> 25$
- d) b/w  $15^\circ$  and  $20^\circ$

**QN** A body is projected up the smooth incline plane having angle of inclination  $\theta$  with the horizontal as shown in the figure. Find the distance covered before stopping.



**QN** In the equilateral triangle frame, then is current of 2A. The side of frame is  $4\sqrt{3}$  cm. Magnetic field at centre C is



**QN** Find the truth table for the given circuit



1.

A	B	Y
0	0	1
0	1	1
1	0	0
1	1	0

2.

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

3.

A	B	Y
0	0	1
0	1	0
1	0	1
1	1	0

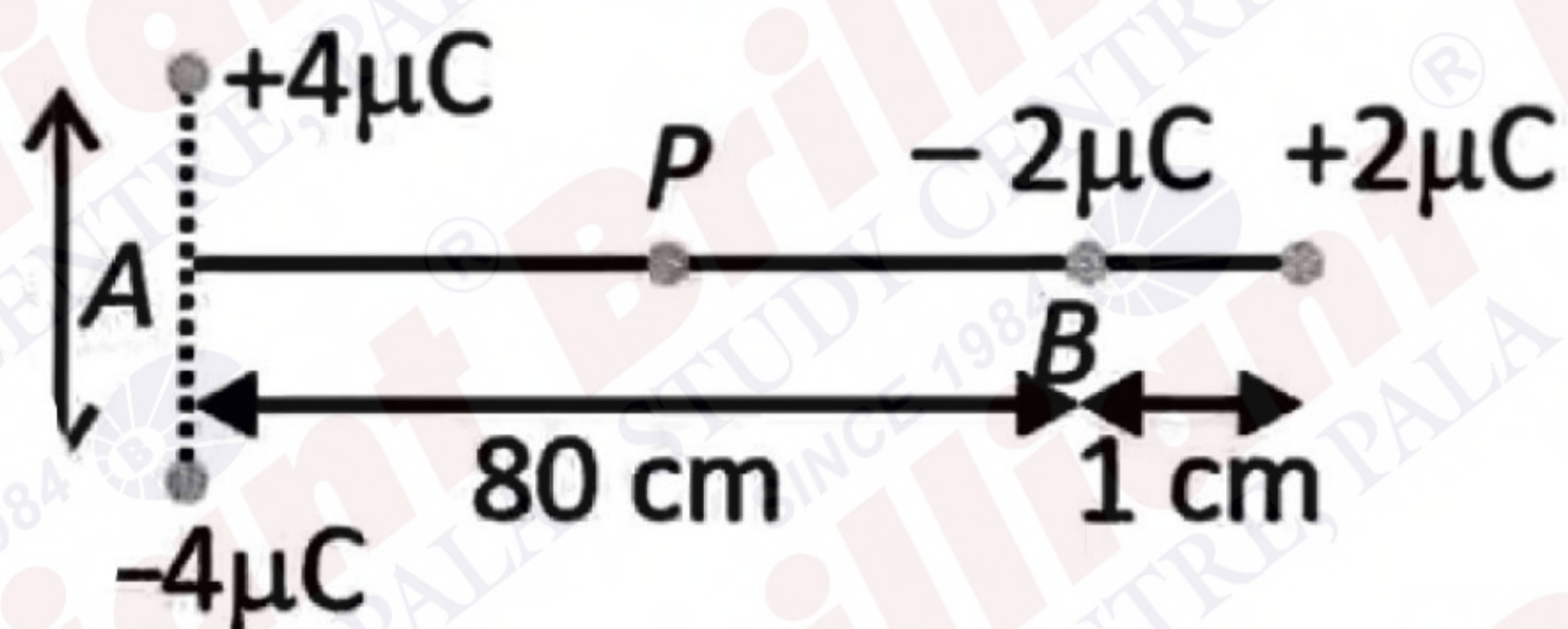
4.

A	B	Y
0	0	1
0	1	0
1	0	0
1	1	1

**QN** An air bubble is moving upward from the bottom of lake having temperature  $17^{\circ}\text{C}$ . At the top of the temperature of lake (and bubble) is  $27^{\circ}\text{C}$ . Assume no significant change in the density of the lake water upto its depth of 5m find the ratio of volume at top to bottom of the bubble

1. 1.25                      2. 1.75                      3. 1.55                      4. 1.85

**QN** Four charges are kept as shown in the figure. Find magnitude of electric field at point P. P is mid-point of the line AB.



**QN** One mole of diatomic gas is expanding isothermally from  $V$  to  $2V$  at  $27^{\circ}\text{C}$ . If the magnitude of work done by the gas in this case is same as the work done in adiabatic process where initial temperature is  $27^{\circ}\text{C}$  and final temperature is  $T^{\circ}\text{C}$ . Find the value of  $T$ .

- 1)  $-37^{\circ}\text{C}$                       2)  $-57^{\circ}\text{C}$                       3)  $-35^{\circ}\text{C}$

**QN** EMF of two cells are measured using potentiometer method. If the balance lengths are 200 cm and 150 cm respectively. If the least count is 1 cm then find % error in calculating  $\frac{E_1}{E_2}$ .

- 1) 1.2 %                      2. 1.16%                      3) 0.50%                      4) 0.75%

**QN** A man jumps from a plane, after 2 seconds he opens his parachute due to which he is retarded with  $3 \text{ m/s}^2$ . When the man is at 10m height from ground his speed is 5 m/s. Find height of the plane when he jumped.

- 1) 92.5 m                      2) 90m                      3) 85m                      4) 110m

**QN** In a long solenoid of cross-section radius of 2 cm and of 500/cm turns density. A ring moves with constant speed 10 cm/s with axis coinciding with the axis of solenoid. The radius and resistance of ring is 1 cm and  $10 \Omega$ . Find heat dissipated in ring while it transverse 10 cm of distance. The current in solenoid is  $I = 10 \cos(100 \pi t)$



- 1)  $300 \mu\text{J}$                       2)  $200 \mu\text{J}$                       3)  $700 \mu\text{J}$                       4)  $850 \mu\text{J}$

**QN** A circular loop of radius 7 cm is placed in uniform Magnetic field of 0.2T directed perpendicular to plane of loop. The loop is converted into a square in 0.5 s the emf in the loop is \_\_\_\_\_ mV

**QN** A mass of the ----- is exploded into three fragments of 2 : 2 : 3 and both equal fragments of 2 : 2: 3 and both equal fragments fly off with same speed 18m/s in mutually perpendicular direction. Then find the speed of the third fragment first after the explosion.

1)  $12\sqrt{2}$

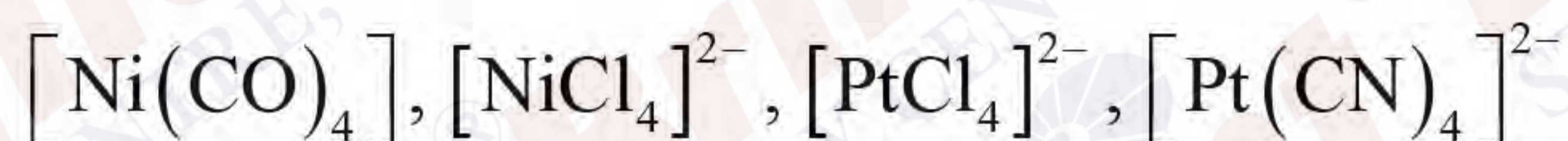
2)  $6\sqrt{2}$

3)  $8\sqrt{2}$

4)  $10\sqrt{2}$

**QN** In Estimation of chlorine by Carius method, 0.245g organic compound gave 0.5453 g AgCl. Find percentage of chlorine in the organic compound

**QN** How many of the following complex (es) have unpaired electrons



**QN** For  $\text{XeO}_2\text{F}_2$ , select the correct statement(s)

A) It shows see-saw shape

B) Number of lone pair(s) of  $e^-$  on Xe is 1

C)  $\angle \text{FXeF} = 180^\circ$  (approx.)

D) It has tetrahedral shape

1) A, C, D only

2) A, B only

3) A, B, C only

4) B, C, D only

**QN** Statement I : Size of  $\text{O}^{2-}$  is smaller than  $\text{F}^-$ .

Statement II : Electronegativity of F is more than that of oxygen.

In the light of above statements, choose the correct option

1) Both statement I and statement II are correct

2) Both statement I and statement II are incorrect

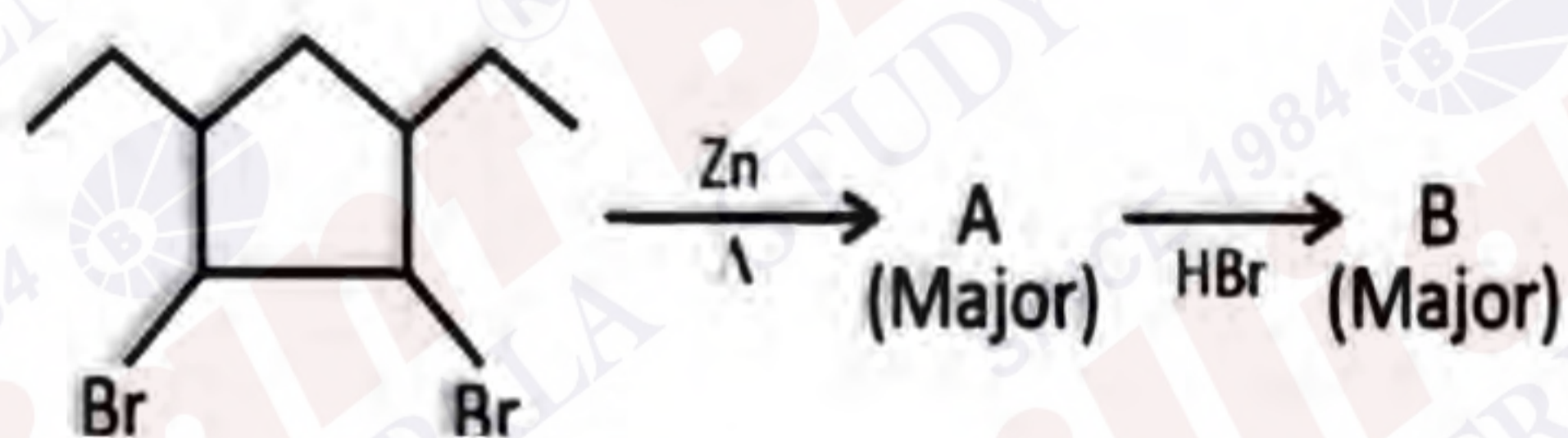
3) Statement I is correct but statement II is incorrect

4) Statement I is incorrect but statement II is correct

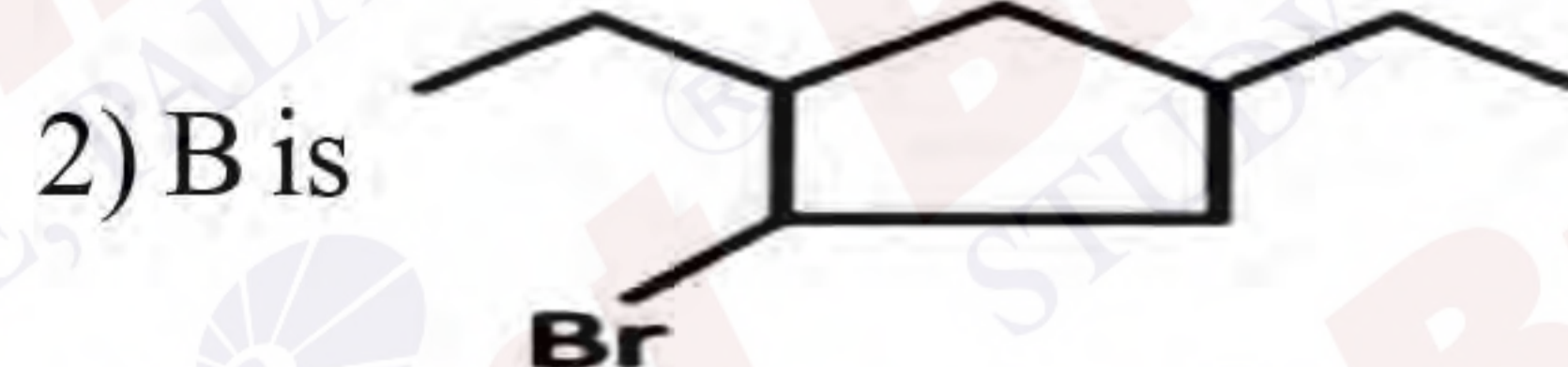
**QN** For a given reaction,  $\text{X}_2 + \text{Y}_2 \rightleftharpoons 2\text{Z}$ , moles of  $\text{X}_2$ ,  $\text{Y}_2$  &  $\text{Z}$  are at equilibrium, 3 mol, 3 mol & 9 mol respectively. If 10 moles of  $\text{Z}$  are added at equilibrium (at constant temperature). Calculate mole of  $\text{Z}$  at new equilibrium?

**QN** An ideal solution is formed by mixing 3 mole of A and 1 mole of B and the vapour pressure of solution is found to be 500 mm Hg. After further addition of 1 mole A, pressure of solution becomes 520 mm Hg. Find  $P_A^0$ .

**QN** Consider the reaction,



Choose the correct option

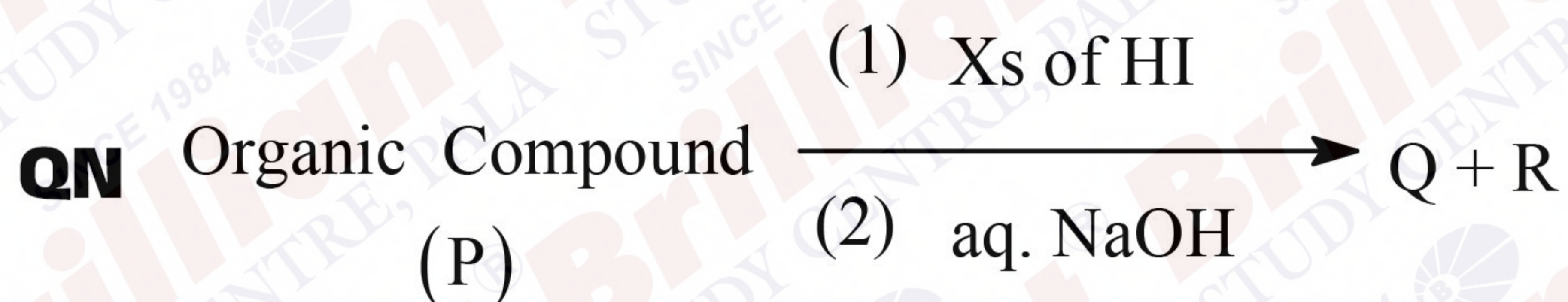


**QN** DNA is optically active due to the presence of

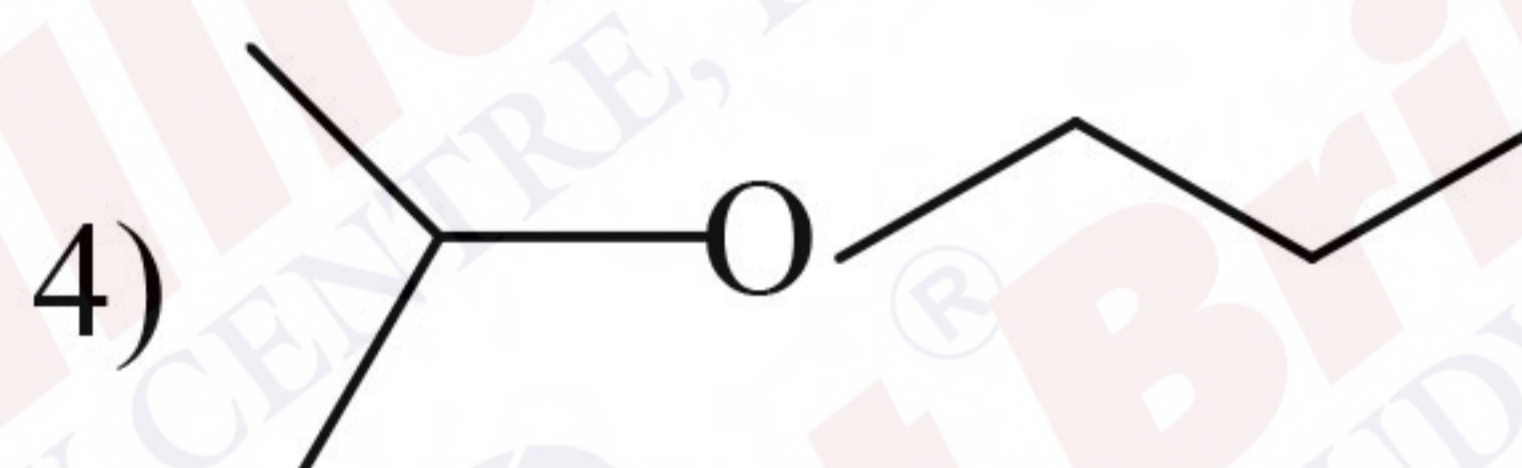
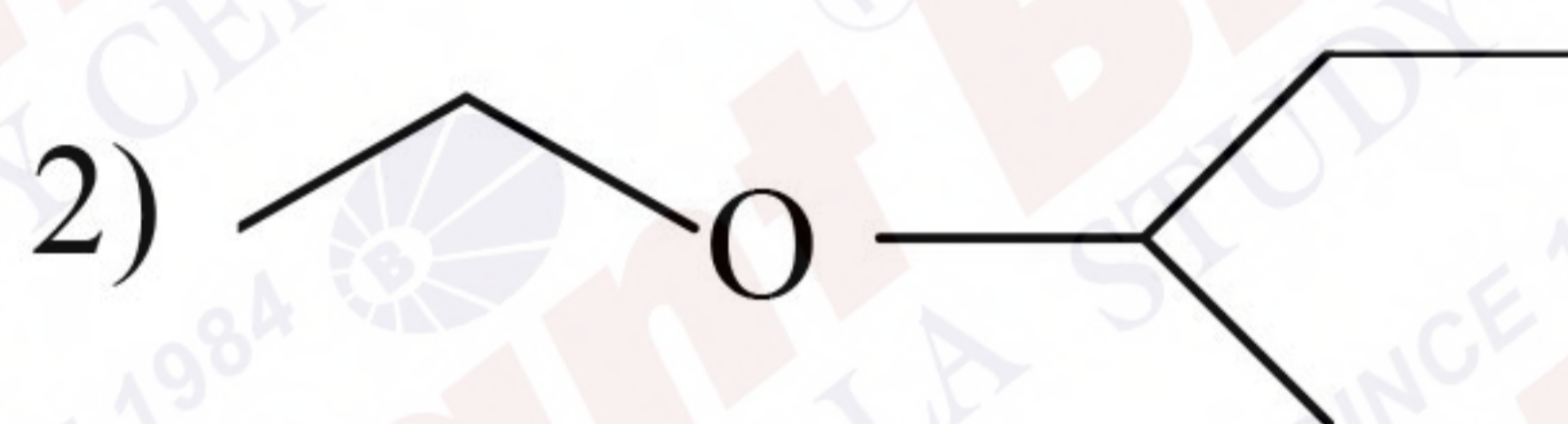
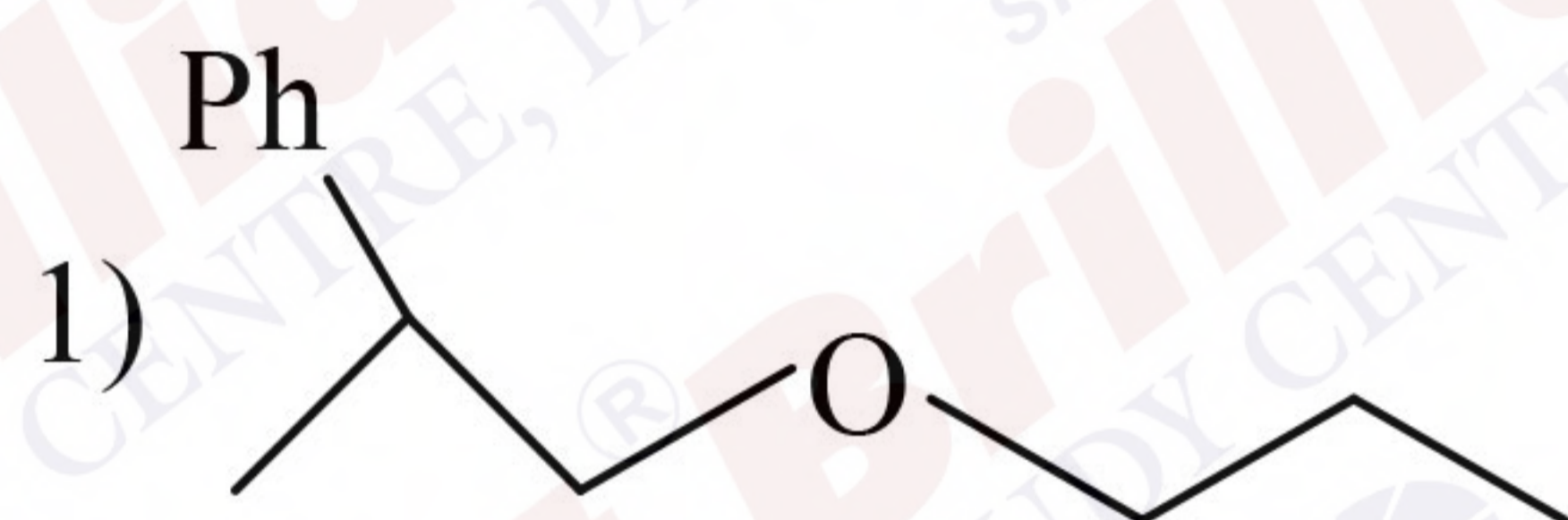
- 1) Purine nitrogenous base
- 2) Phosphate molecule
- 3) D-pentose sugar
- 4) L-pentose sugar

**QN** What is the oxidation state of chromium in the product when  $K_2Cr_2O_7$  reacts with acidified KI

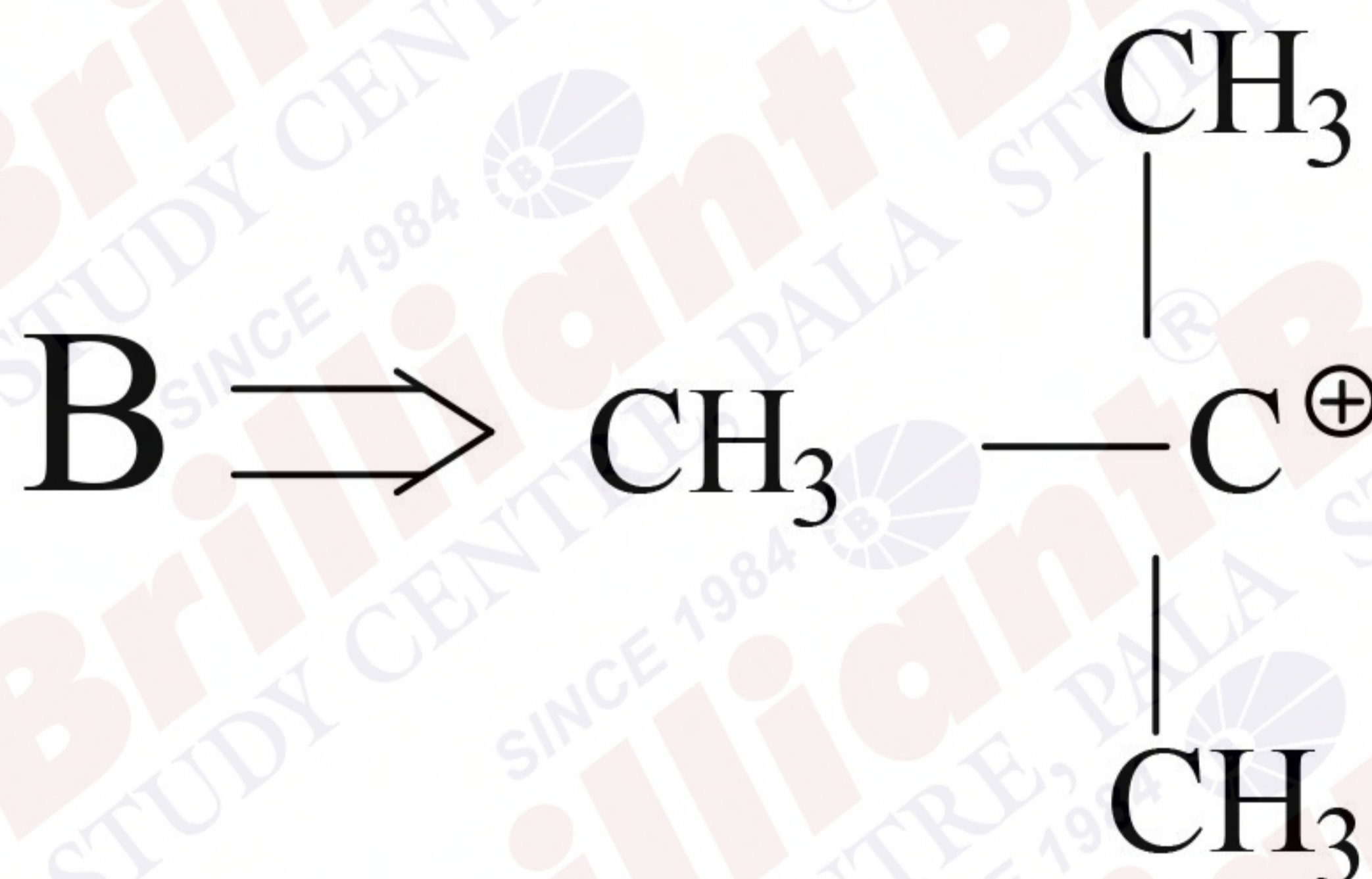
- 1) +6
- 2) +3
- 3) +4
- 4) +4



Q and R both give Iodoform test. Which among the following is P in given compound



**QN** Consider the following intermediates



- 1) B is more stable than A as it has  $9\alpha$  hydrogen
- 2) A is more stable than B as it has  $3\alpha$  hydrogen
- 3) B is more stable than A due to resonance
- 4) A is more stable due to inductive effect

**QN** Consider the following statement about complexes and its hybridisation.



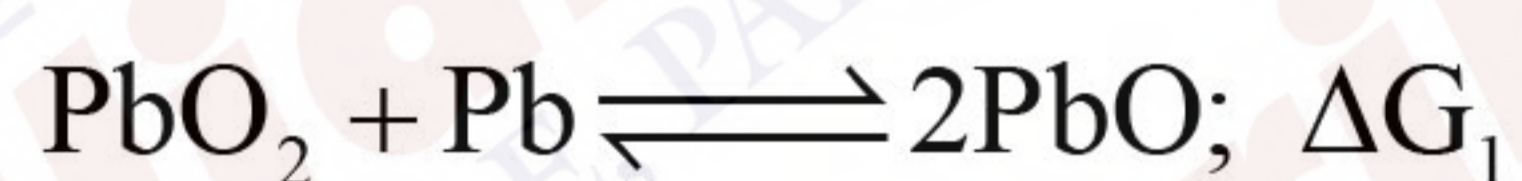
1) A, B, C and D

2) A, B and C only

3) A and B only

4) B and C only

**QN** Consider the following reactions



1)  $\Delta G_1 > 0, \Delta G_2 > 0$

2)  $\Delta G_1 < 0, \Delta G_2 > 0$

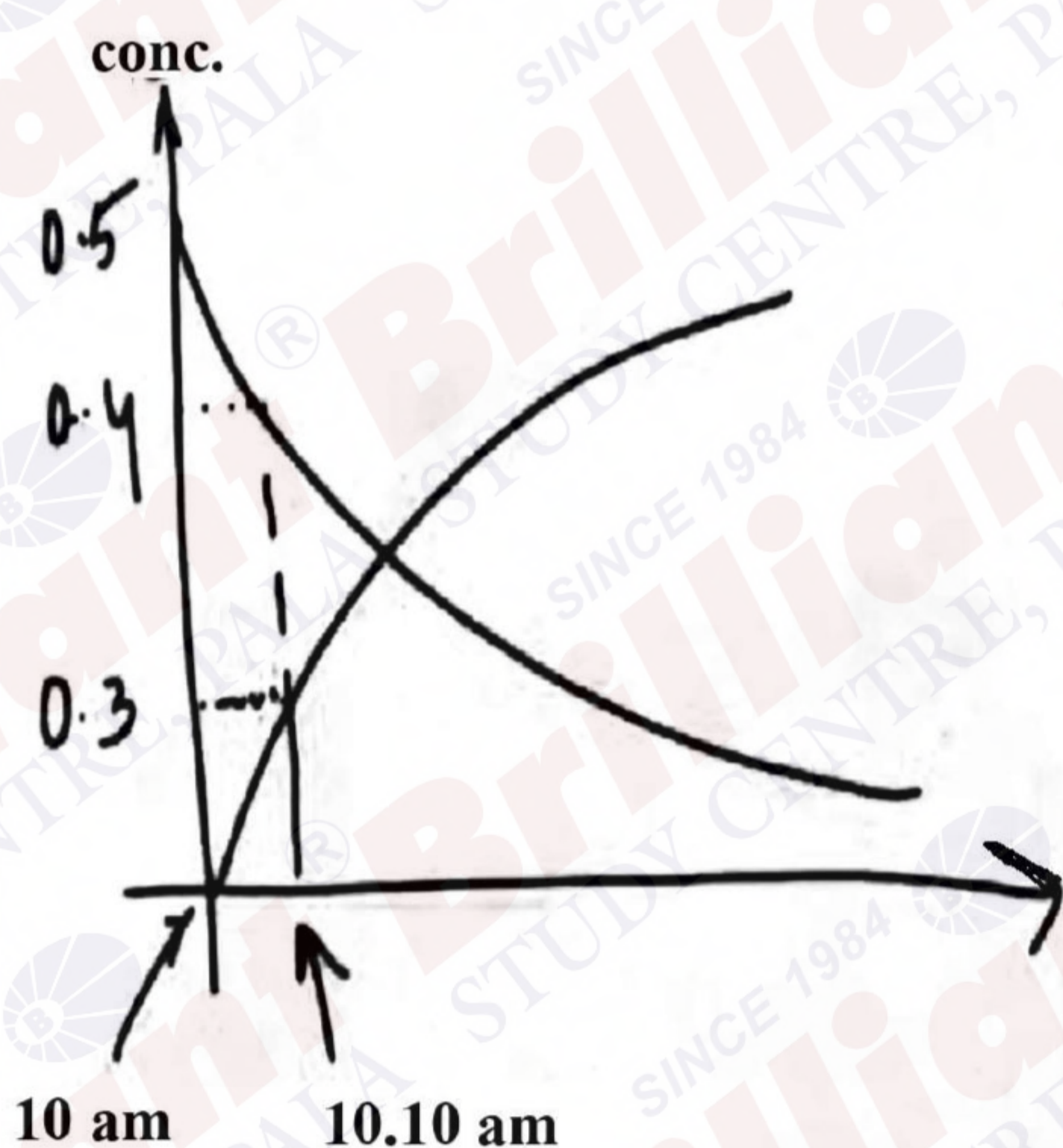
3)  $\Delta G_1 < 0, \Delta G_2 < 0$

4)  $\Delta G_1 > 0, \Delta G_2 < 0$

**QN** If  $\text{K}_2\text{Cr}_2\text{O}_7$  ( $200 \text{ cm}^3, x \times 10^{-3} \text{ M}$ ) reacts with  $0.6 \text{ M}, 750 \text{ cm}^3$  Mohr's salt then find value of X?

**QN** Two metals with work function in ratio  $1 : 2$ , are exposed with photons of energy  $6 \text{ eV}$ . If  $\text{KE}_A : \text{KE}_B$  is  $2.642 : 1$ , then  $\phi_A$  value (in eV) are

**QN** For a given reaction,  $A \rightarrow nB$ , a graph is given b/w concentration and time.



Calculate the value of 'n'

**QN**  $A = \begin{bmatrix} 0 & -2 & 1 \\ -2 & 0 & 1 \\ -1 & 1 & 0 \end{bmatrix}, B(I - A) = I + A$  then  $B =$

**QN** The area between the curves  $x^2 + y^2 = 4$  and  $x^2 + (y-2)^2 = 4$  is

- 1)  $\frac{8\pi}{3} - 2\sqrt{3}$       2)  $\frac{8\pi}{3} + \sqrt{3}$       3)  $\frac{4\pi}{3} - 2\sqrt{3}$       4)  $\frac{4\pi}{3} + 2\sqrt{3}$

**QN** Number of ways to distribute 6 identical oranges among 4 persons such that each gets atleast one orange is

- 1) 8      2) 10      3) 12      4) 13

**QN** If  $\sum_{k=1}^n a_k = \alpha n^2 + \beta n$  and  $a_{10} = 59$   $a_6 = 79$  then find  $\alpha + \beta$

**QN** The minimum value of  $\cos^2 \theta + 6 \sin \theta \cos \theta + 3 \sin^2 \theta + 3$  is

**QN** Let  $A = \{1, 2, 3, \dots, 9\} = xRy$  if and only if  $x - y$  is a multiple of 3.

$S_1$ : Number of elements in  $R$  is 36

$S_2$ :  $R$  is equivalence relation

- 1)  $S_1$  and  $S_2$  both are correct  
 2)  $S_1$  is correct but  $S_2$  is not correct  
 3)  $S_2$  is correct but  $S_1$  is not correct  
 4)  $S_1$  and  $S_2$  both are incorrect

**QN** Bag A contains 9 white and 8 black balls, bag B contains 6 white and 4 black balls. A ball is randomly transferred from bag B to bag A then a ball is drawn from A. If  $P$  (drawn ball is

white from bag A) =  $\frac{p}{q}$  where  $p$  and  $q$  are co - prime. Find  $p + q$

**QN**  $S =$  No. of 4 - digit numbers  $abcd$  where product of digits is 20

$P =$  No. of 5 - digit number  $abcde$  where product of digits is 20, then  $s + p$  is equal to

**QN** The sum of all real solutions of equation  $\log_{x+3} (6x^2 + 28x + 30) =$

$5 - 2 \log_{6x+10} (x^2 + 6x + 9)$  is equal to

- 1) 2      2) 4      3) 1      4) 0

**QN** If the points of intersection of the ellipse  $x^2 + 2y^2 - 6x - 12y + 23 = 0$  and  $4x^2 + 2y^2 - 20x - 12y + 35 = 0$  lie on a circle of radius  $r$  and centre  $(a, b)$  then the value of  $ab + 18r^2$

**QN** Let  $a, b, c$  three vectors such that  $\vec{a} \times \vec{b} = 2(\vec{a} \times \vec{c})$ . If  $|\vec{a}| = 1, |\vec{b}| = 4, |\vec{c}| = 2$  and the angle

between  $\vec{b}$  and  $\vec{c}$  is  $60^\circ$ , then  $|\vec{a} \cdot \vec{c}| =$

**QN** If  $z = \frac{\sqrt{3}}{2} + \frac{i}{2}$  then  $(z^{201} - i)^8$

- 1) 0                      2) 256                      3) 1                      4) -1

**QN** If  $\cot \theta = \frac{-1}{2\sqrt{2}}$  where  $\theta \in \left(\frac{3\pi}{2}, 2\pi\right)$ , then value of

$\sin \frac{15\theta}{2} (\sin 8\theta + \cos 8\theta) + \cos \frac{15\theta}{2} (\cos 8\theta - \sin 8\theta)$  is —

- 1)  $\frac{\sqrt{2}+1}{\sqrt{3}}$                       2)  $-\left(\frac{\sqrt{2}+1}{\sqrt{3}}\right)$                       3)  $-\left(\frac{\sqrt{2}-1}{\sqrt{3}}\right)$                       4)  $\frac{\sqrt{2}-1}{\sqrt{3}}$

**QN** The value of  $\int \frac{dx}{(4x+6)\sqrt{4x^2+12x+7}}$

1)  $\frac{\sqrt{2}}{8} \tan^{-1} \left( \frac{4x^2+12x+7}{\sqrt{2}} \right) + c$

2)  $\frac{\sqrt{2}}{8} \tan^{-1} (4x^2+12x+7)$

3)  $\frac{1}{2} \tan^{-1} \left( \frac{4x^2+12x+7}{2} \right) + c$

4)  $\frac{\sqrt{2}}{4} \tan^{-1} \left( \frac{4x^2+12x+7}{\sqrt{2}} \right) + c$