



# PERFECT SCORE.

Excellence has a permanent address  
- Sri Chaitanya.

**JEE Main 2026 (Session 1)**



**PASALA MOHITH**

Appl.No: 260310432915

**CLASSROOM STUDENT**

*🎉 Congratulations To Parents, Teachers & Staff 🎉*

#TransformingYourDreamsIntoReality

[www.srichaitanya.net](http://www.srichaitanya.net)



040-66 06 06 06



**Sri Chaitanya**  
Educational Institutions



# JEE MAIN 2026 - SESSION 2

02-04-2026 - Shift 2

**TOPPERS ARE NOT BORN,  
THEY'RE MADE @ SRI CHAITANYA**

JEE MAIN 2025



**AJAY REDDY VANGALA**  
HT. NO. 250310255592  
CLASSROOM STUDENT FROM GRADE IX-XII

JEE ADV 2025



**D. GNANA RUTVIK SAI**  
HT. NO. 256055278\*

NEET 2025



**KAVISH**  
HT. NO. 250411147966\*  
CLASSROOM STUDENT

SCAN FOR  
VIDEO SOLUTIONS



Call Us Now: **040-66 06 06 06**

[www.srichaitanya.net](http://www.srichaitanya.net)

Follow us    

#TransformingYourDreamsIntoReality



# Sri Chaitanya IIT Academy.,India.

✦ A.P ✦ T.G ✦ KARNATAKA ✦ TAMILNADU ✦ MAHARASTRA ✦ DELHI ✦ M.P ✦ U.P ✦ HARYANA  
✦ RAJASTHAN ✦ PUNJAB ✦ W.B ✦ ODISHA ✦ BIHAR

A right Choice for the Real Aspirant  
ICON Central Office - Madhapur - Hyderabad

## 02-Apr-2026 Shift-II JEE Main-2026 Session-II (Apr)

### MATHEMATICS

Max Marks: 100

#### SECTION-I (SINGLE CORRECT ANSWER TYPE)

This section contains **20 Multiple Choice Questions**. Each question has 4 options (1), (2), (3) and (4) for its answer, out of which **ONLY ONE** option can be correct.

**Marking scheme: +4 for correct answer, 0 if not attempted and -1 in all other cases.**

1. Let  $\alpha, \beta$  be the roots of the equation  $x^2 - 3x + r = 0$  and  $\frac{\alpha}{2}, 2\beta$  be the roots of the equation  $x^2 + 3x + r = 0$ . If the roots of the equation  $x^2 + 6x = m$  are  $2\alpha + \beta + 2r$  and  $\alpha - 2\beta - \frac{r}{2}$ , then  $m$  is equal to

- 1) -135                      2) -567                      3) 135                      4) 567

**Key 4**

**Sol**  $\alpha + \beta = 3, \alpha\beta = r$

$$\frac{\alpha}{2} + 2\beta = -3, \alpha\beta = r$$

$$\Rightarrow \alpha = 6, \beta = -3, r = -18$$

$$\alpha + \beta + 2r = -27, \alpha - 2\beta - \frac{r}{2} = 21$$

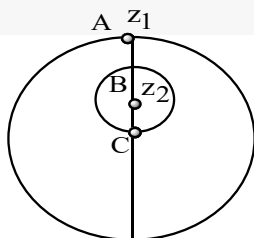
$$(-27)(21) = -m \Rightarrow m = 567$$

2. Let the circles  $C_1 : |z| = r$  and  $C_2 : |z - 3 - 4i| = 5, z \in C$ , be the such that  $C_2$  lies within  $C_1$ . If  $z_1$  moves on  $C_1, z_2$  moves  $C_2$  and  $\min |z_1 - z_2| = 2$ , then  $\max |z_1 - z_2|$  is equal to

- 1) 12                      2) 17                      3) 22                      4) 24

**Key 3**

**Sol**  $AB = 2, BC = 10, CD = 10$



$$\therefore \max \text{ of } |z_1 - z_2| = 22$$

3. If the system of equations  $x + 5y + 6z = 4$ ,  $2x + 3y + 4z = 7$ ,  $x + 6y + az = b$  has infinitely many solutions, then the point  $(a, b)$  lies on the line

- 1)  $y - x = 3$       2)  $x - y = 3$       3)  $x + y = 11$       4)  $x + y = 12$

**Key 2**

**Sol** 
$$\begin{vmatrix} 1 & 5 & 6 \\ 2 & 3 & 4 \\ 1 & 6 & a \end{vmatrix} = 0 \Rightarrow a = \frac{50}{7}$$

$$\begin{vmatrix} 1 & 5 & 4 \\ 2 & 3 & 7 \\ 1 & 6 & b \end{vmatrix} \Rightarrow b = \frac{29}{7}$$

$$(a, b) = \left( \frac{50}{7}, \frac{29}{7} \right)$$

4. Let  $a_1, a_2, a_3, \dots$  be an A.P and  $g_1 = a_1, g_2, g_3, \dots$  be an increasing G.P. If

$$a_1 = a_2 + g_2 = 1 \text{ and } a_3 + g_3 = 4, \text{ then } a_{10} + g_5 \text{ is equal to}$$

- 1) 81      2) 76      3) 62      4) 55

**Key 4**

**Sol**  $a_3 + g_3 = 4$

$$\Rightarrow r^2 - 2r - 3 = 0$$

$$\Rightarrow r = 3, d = -3$$

$$a_{10} + g_5 = 19d + (-3)^4$$

$$a_{10} + g_5 = 55$$

5. The sum  $\frac{1^3}{1} + \frac{1^3 + 2^3}{1+3} + \frac{1^3 + 2^3 + 3^3}{1+3+5} + \dots$  up to 8 terms, is:

- 1) 70      2) 71      3) 72      4) 73

**Key 2**

**Sol** 
$$t_n = \frac{n^2 + 2n + 1}{4}$$

$$S_n = \frac{1}{4} \left( \frac{n(n+1)(2n+1)}{6} + n + n(n+1) \right)$$

$$S_8 = 71$$

6. If for  $3 \leq r \leq 30$ ,  $\binom{30}{30-r} + 3\binom{30}{31-r} + 3\binom{30}{32-r} + \binom{30}{33-r} = {}^m C_r$ , then m equals:

- 1) 31                      2) 32                      3) 33                      4) 34

**Key 3**

**Sol**  ${}^3 C_0 \cdot {}^{30} C_r + {}^{30} C_1 \cdot {}^{30} C_{r-1} + {}^3 C_2 \cdot {}^{30} C_{r-2} + {}^3 C_3 \cdot {}^{30} C_{r-3} = {}^{33} C_r$

$m = 33$

7. Let  $P_n$  denotes the total number of triangles formed by joining the vertices of an n-side regular polygon. If  $P_{n+1} - P_n = 66$ , then the sum of all distinct prime divisors of n is

- 1) 7                      2) 8                      3) 5                      4) 6

**Key 3**

**Sol**  ${}^{n+1} C_3 - {}^n C_3 = 66 \Rightarrow n = 12$

Sum of prime division = 5

8. A man throws a fair coin repeatedly. He gets 10 points for each head he throws and 5 points for each tail he throws. If the probability that he gets exactly 30 points is

$\frac{m}{n}$ ,  $\gcd(m, n) = 1$ , then  $m+n$  is equal to

- 1) 53                      2) 55                      3) 107                      4) 105

**Key 3**

**Sol**  $AM = \left(\frac{1}{2}\right)^6 + \left(\frac{1}{2}\right)^5 \cdot {}^5 C_1 + \left(\frac{1}{2}\right)^4 \cdot {}^4 C_2 + \left(\frac{1}{2}\right)^3$

$\frac{m}{n} = \frac{43}{64} \Rightarrow m + n = 107$

9. The mean and variance of n observations are 8 and 16, respectively. If the sum of the first (n-1) observations is 48 and the sum of squares of the first (n-1) observations is 496, then the value of n is

- 1) 21                      2) 16                      3) 13                      4) 7

**Key 4**

**Sol**  $\frac{\sum x_i}{n} = 8 \Rightarrow \sum x_i = 8n - 48$

$\frac{\sum x_i^2}{n} = (\bar{x})^2 = 16 \Rightarrow 80n = \sum x_i^2 = 496 + xn^2$

$$80n = 496 + 8(n - 6)^2$$

$$n = 7$$

10. Let a circles pass through the origin and its centre be the point of intersection of two mutually perpendicular lines  $x + (k-1)y + 3 = 0$  and  $2x + k^2y - 4 = 0$ . If the line  $x - y + 2 = 0$  intersects the circles at the points A and B, then  $(AB)^2$  is equal to

- 1) 10                      2) 27                      3) 18                      4) 34

**Key 3**

**Sol**  $k = -1$

$$\Rightarrow x - 2y + 3 = 0, 2x + y - 4 = 0$$

$$\Rightarrow C = (1, 2), r = \sqrt{5}$$

$$AB = 2\sqrt{r^2 - d^2} = 2\sqrt{5 - \frac{1}{2}}$$

$$AB^2 = 18$$

11. Let O be the origin, and P and Q be two points on the rectangular hyperbola  $xy = 12$  such that the mid point of the line segment PQ is  $\left(\frac{1}{2}, -\frac{1}{2}\right)$ . Then the area of the triangle

OPQ equals:

- 1)  $\frac{3}{2}$                       2)  $\frac{5}{2}$                       3)  $\frac{7}{2}$                       4)  $\frac{9}{2}$

**Key 3**

**Sol** Mid point of chord  $S_1 = S_{11}$

$$\Rightarrow x - y = 1$$

$$x - y = 1, xy = 12$$

$$\text{Point of intersection} = (-3, -4), (4, 3)$$

$$\text{Area of } \Delta OPQ = \frac{7}{2}$$

12. Let the parabola  $y = x^2 + px + q$  passing through the point  $(1, -1)$  be such that the distance between its vertex and the x-axis is minimum. Then the value of  $p^2 + q^2$  is:

- 1) 2                      2) 4                      3) 5                      4) 8

**Key 2**

**Sol**  $y = x^2 + px + q$

$$(I_1 - 1) \Rightarrow \boxed{p + q = -2}$$

$$\min = \frac{4ac - b^2}{4a} = \frac{4q - p^2}{4}$$

$$= \frac{(p+2)^2 + 4}{-4}$$

$$\therefore \min \text{ at } p = -2 \text{ and } q = 0$$

$$\therefore p^2 + q^2 = 4$$

**13.** Let  $P = \{\theta \in [0, 4\pi] : \tan^2 \theta \neq 1\}$  and  $S = \{a \in \mathbb{Z} : 2(\cos^8 \theta - \sin^8 \theta) \sec 2\theta = a^2, \theta \in P\}$ . Then  $n(S)$

is:

1) 0

2) 1

3) 2

4) 3

**Key 1**

**Sol**  $p = \{[0, 4\pi] / \tan^2 \theta \neq 1\}$

$$\Rightarrow p \in [0, 4\pi] - \left\{ \pm \frac{\pi}{4}, \pm \frac{3\pi}{4}, \dots \right\}$$

$$s = \{a \in \mathbb{Z} / 2(\cos^8 \theta - \sin^8 \theta) \sec 2\theta = a^2, \theta \in p\}$$

$$2(\cos^4 \theta + \sin^4 \theta)(\cos^2 \theta - \sin^2 \theta) \sec 2\theta = a^2$$

$$2 \left[ (\cos^2 \theta + \sin^2 \theta)^2 - 2\sin^2 \theta \cos^2 \theta \right] = a^2$$

$$\sin^2 2\theta = 2 - a^2$$

$$\Rightarrow 1 \leq a^2 \leq 2$$

$$a^2 = 1 (\because a \in \mathbb{Z}) \Rightarrow a = \pm 1$$

$$n(s) = 0$$

**14.** Let the vectors  $\vec{a} = -\hat{i} + \hat{j} + 3\hat{k}$  and  $\vec{b} = \hat{i} + 3\hat{j} + \hat{k}$ . For some  $\lambda, \mu \in \mathbb{R}$ , let  $\vec{c} = \lambda\vec{a} + \mu\vec{b}$ . If

$$\vec{c} \cdot (3\hat{i} - 6\hat{j} + 2\hat{k}) = 10 \text{ and } \vec{c} \cdot (\hat{i} + \hat{j} + \hat{k}) = -2 \text{ then } |\vec{c}|^2 \text{ is equal to}$$

1) 8

2) 12

3) 14

4) 15

**Key 2**

**Sol**  $\vec{a} = -\hat{i} + \hat{j} + 3\hat{k}; \vec{b} = \hat{i} + 3\hat{j} + \hat{k}; \vec{c} = \lambda\vec{a} + \mu\vec{b}$

$$\bar{c} \cdot (3i - 6j + 2k) = \boxed{-3\lambda - 13\mu}$$

$$\Rightarrow \boxed{3\lambda + 13\mu = -10}$$

$$\bar{c} \cdot (i + j + k) = 3\lambda + 5\mu$$

$$\lambda = 1, \mu = -1$$

$$\Rightarrow \bar{c} = -2i - 2j - 2k$$

$$|\bar{c}|^2 = 12$$

15. Let the points A be the foot of perpendicular drawn from the point P(a, b, 0) on the line

$$\frac{x-1}{2} = \frac{y-2}{1} = \frac{z-\alpha}{3}. \text{ If the mid point of the line segment PA is } \left(0, \frac{3}{4}, \frac{-1}{4}\right), \text{ then the value}$$

of  $a^2 + b^2 + \alpha^2$  is equal to :

1) 1

2) 2

3) 6

4) 9

**Key 1**

**Sol**  $2a + b = 0$

$$2r + a = -1, 2r + 2b = -1$$

$$6r + 2\alpha = -1$$

$$\Rightarrow a = 0 = b, r = \frac{-1}{2}, \alpha = 1$$

$$\therefore a^2 + b^2 + \alpha^2 = 1$$

16. Two adjacent sides of a parallelogram PQRS are given by  $\overline{PQ} = \hat{j} + \hat{k}$  and  $\overline{PS} = \hat{i} - \hat{j}$ . If the side PS is rotated about the point P by an acute angle  $\alpha$  in the plane of the parallelogram

so that it becomes perpendicular to the side PQ, then  $\sin^2\left(\frac{5\alpha}{2}\right) - \sin^2\left(\frac{\alpha}{2}\right)$  is equal to

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

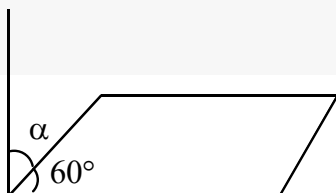
2)  $\frac{\sqrt{3}}{2}$

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

4)  $\frac{2\sqrt{3}}{5}$

**Key 2**

**Sol**  $\Rightarrow \alpha = 30^\circ \sin^2 \frac{5\alpha}{2} - \sin^2 \frac{\alpha}{2} = \frac{\sqrt{3}}{2}$



17. The value of  $\int_0^{20\pi} (\sin^4 x + \cos^4 x) dx$  is equal to

- 1)  $\frac{15\pi}{2}$                       2)  $25\pi$                       3)  $15\pi$                       4)  $\frac{25\pi}{2}$

**Key 3**

**Sol** 
$$\int_0^{20\pi} (\sin^4 x + \cos^4 x) dx$$

$$\Rightarrow 40 \int_0^{\pi/2} \left(1 - \frac{\sin^2 2x}{2}\right) dx = 15\pi$$

18. Let  $f(x)$  be a polynomial of degree 5 and have extrema at  $x = 1$  and  $x = -1$ . If

$$\lim_{x \rightarrow 0} \left( \frac{f(x)}{x^3} \right) = -5, \text{ then } f(2) - f(-2) \text{ is equal to}$$

- 1) 0                              2) 50                              3) 92                              4) 112

**Key 4**

**Sol**  $f(x) = ax^5 + bx^4 - 5x^3$   
 $f'(1) = f'(-1) = 0$   
 $\Rightarrow 5a + 4b = +15$   
 $5a - 4b = +15$   
 $\Rightarrow a = -3, b = 0$   
 $\Rightarrow f(x) = 3x^5 - 5x^3 \Rightarrow f(2) - f(-2) = 112$

19. Let  $f(x) = \int \left( \frac{16x+24}{x^2+2x-15} \right) dx$ . If  $f(4) = 14 \log_e(3)$  and  $f(7) = \log_e(2^\alpha \cdot 3^\beta)$ ,  $\alpha, \beta \in \mathbb{N}$ , then  $\alpha + \beta$  is equal to

- 1) 31                              2) 37                              3) 39                              4) 41

**Key 3**

**Sol**

$$16x + 24 = A(2x + 2) + B$$

$$A = 8, B = 8$$

$$\frac{16x + 24}{x^2 + 2x - 15} = \frac{8(2x + 2)}{x^2 + 2x - 1} + \frac{8}{x^2 + 2x - 15}$$

$$\int \frac{16x + 24}{x^2 + 2x - 15} dx = 8 \log(x^2 + 2x - 15) + \log \left| \frac{x-3}{x+5} \right| + C$$

$$f(4) = 14 \log 3$$

$$14 \log 3 = 8 \log 4 + \log \frac{1}{9} + C$$

$$C = 0$$

$$f(7) = \log(2^2 \cdot 3^{37})$$

$$\boxed{\text{AM} = 39}$$

20. Let  $x = x(y)$  be the solution of the differential equation

$$2y^2 \frac{dx}{dy} - 2xy + x^2 = 0, y > 1, x(e) = e. \text{ then } x(e)^2 \text{ is equal to}$$

- 1)  $\frac{3}{2}e^2$       2)  $\frac{2}{3}e^2$       3)  $e^2$       4)  $2e^2$

**Key 2**

**Sol** 
$$\frac{dy}{dx} - \frac{x}{y} + \frac{x^2}{2y^2} = 0$$

$$-\frac{1}{x} = t$$

$$\frac{dt}{dy} + t \left( \frac{1}{y} \right) = \frac{-1}{2y^2}$$

$$\text{I.F} = y$$

$$ty = \int y \left( \frac{-1}{2y^2} \right) dy$$

$$\frac{-y}{x} = -\frac{1}{2} \log y + c$$

$$c = e$$

$$x = \frac{2y}{\log(ey)} \Rightarrow \therefore x(e^2) = \frac{2}{3}e^2$$

### SECTION-II (NUMERICAL VALUE TYPE)

This section contains **5 Numerical Value Type Questions**. The Answer should be within **0 to 9999**. If the Answer is in **Decimal** then round off to the **Nearest Integer** value (Example i.e. If answer is above **10** and less than **10.5** round off is **10** and If answer is from **10.5** and less than **11** round off is **11**).

**Marking scheme: +4 for correct answer, 0 if not attempt and -1 in all other cases.**

21. Let  $A = \{2, 3, 4, 5, 6\}$ . Let  $R$  be a relation on the set  $A \times A$  given by  $(x, y)R(z, w)$  if and only if  $x$  divides  $z$  and  $y \leq w$ . Then the number of elements in  $R$  is

**Key 120**

**Sol AM = 120**

22. Consider the matrices  $A = \begin{bmatrix} 2 & -2 \\ 4 & -2 \end{bmatrix}$  and  $B = \begin{bmatrix} 3 & 9 \\ 1 & 3 \end{bmatrix}$ . If matrices P and Q are such that  $PA = B$  and  $AQ = B$ , then the absolute value of the sum of the diagonal elements of  $2(P+Q)$  is.....

**Key 34**

**Sol**  $P = BA^{-1}$ ,  $Q = A^{-1}B$

23. Let A be the point (3,0) and circles with variable diameter AB touch the circle  $x^2 + y^2 = 36$  internally. Let the curve C be the locus of the point B. If the eccentricity of C is e, then  $72e^2$  is equal to .....

**Key 18**

**Sol**  $C_1C_2 = |r_1 - r_2|$

$$\sqrt{(x+3)^2 + y^2} + \sqrt{(x-3)^2 + y^2} = 12$$

$$\Rightarrow SS' = 6$$

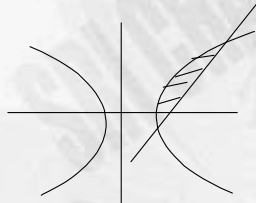
$$\Rightarrow 2ae = 6$$

$$72e^2 = 18$$

24. If the area of the region bounded by  $16x^2 - 9y^2 = 144$  and  $8x - 3y = 24$  is A, then  $3(A + 6\log_e(3))$  is equal to

**Key 24**

**Sol**  $\frac{x^2}{9} - \frac{y^2}{16} = 1$



$$\int_3^5 \left( \frac{8x-24}{3} - \frac{4}{3}\sqrt{x^2-9} \right) dx = 24$$

25. The number of points in the interval  $[2, 4]$  at which the function  $f(x) = \left[ x^2 - x - \frac{1}{2} \right]$ , where  $[.]$  denotes the greatest integer function, is discontinuous, is.....

**Key 10**

**Sol** AM = 10

## PHYSICS

Max Marks: 100

SECTION-I  
(SINGLE CORRECT ANSWER TYPE)

This section contains **20 Multiple Choice Questions**. Each question has 4 options (1), (2), (3) and (4) for its answer, out of which ONLY ONE option can be correct.

**Marking scheme: +4 for correct answer, 0 if not attempted and -1 in all other cases.**

26. Dimensions of universal gravitational constant (G) in terms of Planck's constant (h), distance (L), mass (M) and time (T) are \_\_\_\_\_

- 1)  $[hTLM^2]$       2)  $[hT^{-1}LM^{-2}]$       3)  $[hTL^2M^{-2}]$       4)  $[h^{-1}T^{-1}LM^{-2}]$

**Key:** 2

**Sol:**  $G = h(L^x M^y T^z)$

$$\Rightarrow \frac{G}{h} = L^x M^y T^z$$

$$\Rightarrow \frac{M^{-1} L^3 T^{-2}}{ML^2 T^{-1}} = L^x M^y T^z$$

$$\Rightarrow x = +1, y = -2, z = -1$$

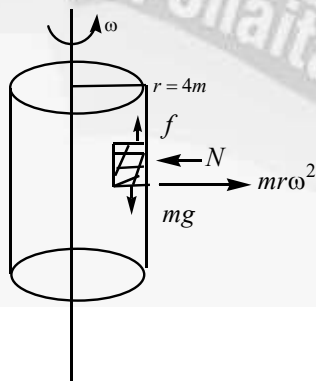
$$\text{So } G = h[T^{-1}LM^{-2}]$$

27. A 0.5 kg mass is in contact against the inner wall of a cylindrical drum of 4 m rotating about its vertical axis. The minimum rotational speed of the drum to enable the mass to remain stuck to the wall (without falling) is  $5 \text{ rad/s}$ . The coefficient of friction between the drum's inner wall surface and mass is \_\_\_\_\_ (Take  $g = 10 \text{ m/s}^2$ )

- 1) 0.1      2) 0.5      3) 0.7      4) 0.3

**Key:** 1

**Sol:**



$$\Rightarrow f = mg$$

$$\mu N = mg$$

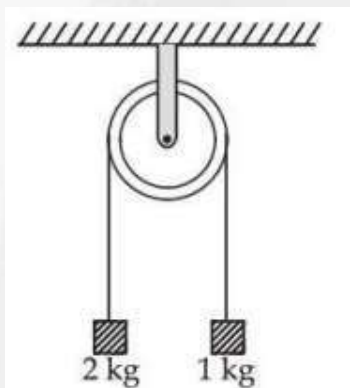
$$\mu(mr\omega^2) = mg$$

$$\Rightarrow \mu r\omega^2 = g$$

$$\Rightarrow \mu(4)(25) = 10$$

$$\mu = 0.1$$

28. Two blocks of masses 2 kg and 1 kg respectively, are tied to the ends of a string which passes over a light frictionless pulley as shown in the figure below. The masses are held at rest at the same horizontal level and then released. The distance traversed by the centre of mass in 2 s is \_\_\_\_\_ m.



- 1) 3.33                      2) 3.12                      3) 2.22                      4) 1.42

**Key: 3**

**Sol:** 
$$a_{cm} = \frac{m_1 a_1 + m_2 a_2}{m_1 + m_2}$$

But  $a_2 \downarrow (+Ve)$

$a_1 \uparrow (-Ve)$

$$\therefore a_{cm} = \left( \frac{m_2 - m_1}{m_1 + m_2} \right) a$$

But  $a = \left( \frac{m_2 - m_1}{m_1 + m_2} \right) g \rightarrow a_{cm} = \left( \frac{m_2 - m_1}{m_1 + m_2} \right)^2 g \Rightarrow \frac{10}{9}$

$$\therefore S = \frac{1}{2} \times a_{cm} \times t^2 \Rightarrow \frac{1}{2} \times \frac{10}{9} \times 4 \Rightarrow \frac{20}{9} \cong 2.22$$

29. A particle having charge  $10^{-9} C$  moving in x-y plane in fields of  $0.4 \hat{j} N/C$  and  $4 \times 10^{-3} \hat{k} T$  experience force of  $(4\hat{i} \times 2\hat{j}) \times 10^{-10} N$ . The velocity of the particle at that instant is \_\_\_\_\_ m/s.

- 1)  $50\hat{i} + 100\hat{j}$             2)  $100\hat{i} + 50\hat{j}$             3)  $-50\hat{i} + 100\hat{j}$             4)  $50\hat{i} - 100\hat{j}$

**Key: 1****Sol:**  $F = \bar{E}q + q(\vec{V} + \vec{B})$ , put  $\vec{V} = x\hat{i} + y\hat{j}$ 

$$\Rightarrow F = q(\vec{E} + \vec{V} \times \vec{B}) \Rightarrow (4\hat{i} + 2\hat{j}) \times 10^{-10} = 10^{-9} [0.4\hat{j} + (x\hat{i} + 4\hat{j}) \times (4 \times 10^{-3}\hat{k})]$$

$$\Rightarrow 0.4\hat{i} + 0.2\hat{j} = 0.4\hat{j} + [(4 \times 10^{-3})x(-\hat{j}) + (4 \times 10^{-3})y\hat{i}]$$

$$\Rightarrow 0.4\hat{i} + 0.2\hat{j} = 0.4\hat{j} [(0.4 - 4 \times 10^{-3}x)\hat{j} + 4 \times 10^{-3}y\hat{i}]$$

$$\Rightarrow 0.4 = 4 \times 10^{-3}y \Rightarrow 4 = 4 \times 10^{-2}y \Rightarrow y = 100$$

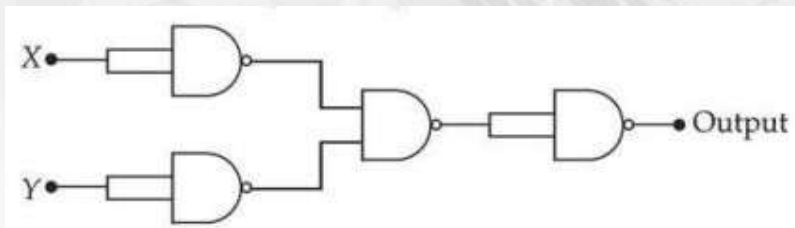
$$\text{Ily } 0.2 = 0.4 - 4 \times 10^{-3}x$$

$$\Rightarrow x \times 4 \times 10^{-3} = 0.2$$

$$\Rightarrow 4x^2 \times 10^{-2} = 21 \Rightarrow x = \frac{100}{2} = 50$$

$$\vec{V} = 50\hat{i} + 100\hat{j}$$

30. If X and Y are the inputs, the given circuit works as \_\_\_\_\_



- 1) OR gate      2) AND gate      3) NAND gate      4) NOR gate

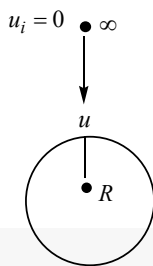
**Key: 4****Sol:**  $\overline{\bar{x}\bar{y}} \Rightarrow \bar{x}\bar{y}$ 

$$\Rightarrow \overline{x+y} \Rightarrow \text{NOR gate}$$

31. If a body of mass 1 kg falls on the earth from infinity, it attains velocity ( $v$ ) and kinetic energy ( $k$ ) on reaching the surface of earth. The values of  $v$  and  $k$  respectively are \_\_\_\_\_(Take radius of earth to be 6400 km and  $g = 9.8 \text{ m/s}^2$ )

- 1)  $11.2 \text{ km/s}$ ;  $6.27 \times 10^7 \text{ J}$       2)  $11.2 \text{ km/s}$ ;  $12.54 \times 10^7 \text{ J}$   
 3)  $8.8 \text{ km/s}$ ;  $6.27 \times 10^7 \text{ J}$       4)  $8.8 \text{ km/s}$ ;  $12.54 \times 10^7 \text{ J}$

**Key: 1****Sol:**



By using conservation of energy

$$\frac{-GMm}{R} + \frac{1}{2}mu^2 = 0$$

$$\Rightarrow KE = \frac{GMm}{R} = gmR$$

$$KE = mgR = 6.27 \times 10^7$$

$$\therefore KE = \frac{1}{2}mv^2 = 6.27 \times 10^7 \Rightarrow v = 11.2 \text{ km/sec}$$

32. In a screw gauge the zero of main scale reference line coincides fifth division of the circular scale when two studs are in contact. There are 100 divisions in circular scale and pitch of screw gauge is 0.1 mm. When diameter of a sphere is measure, the reading of main scale is

5 mm and 50<sup>th</sup> division of circular scale coincides with the reference line of main scale.

The diameter of sphere is \_\_\_\_\_ mm.

- 1) 5.045      2) 5.055      3) 5.450      4) 5.550

**Key: 1**

$$\text{Sol: } L.C = \frac{\text{pitch}}{\text{no. of circular scale divisions}} = \frac{0.1 \text{ mm}}{100} \Rightarrow 0.001 \text{ mm}$$

$$\text{Reading} = MSD + (ch.HSR) \times L.C - \text{zero error}$$

$$= (5 + 50 \times 0.001) - 5 \times 0.001$$

$$= 5 + 0.05 - 0.005 \Rightarrow 5.045$$

33. The surface tension of a soap bubble is 0.03 N/m. The work done in increasing the diameter of bubble from 2 cm to 6 cm is  $\alpha\pi \times 10^{-4} J$ . The value of  $\alpha$  is \_\_\_\_\_. (Take  $\pi = 3.14$ )

- 1) 0.86      2) 0.64      3) 1.92      4) 7.68

**Key: 3**

$$\text{Sol: } W = 2T(\Delta A) \Rightarrow 2T \times (\pi r_2^2 - \pi r_1^2)$$

$$W = 8 \times \pi \times 3 \times 10^{-2} (9 \times 10^{-4} - 1 \times 10^{-4})$$

$$W = 24 \times \pi \times 10^{-2} \times 8 \times 10^{-4}$$

$$W = \frac{192}{100} \pi \times 10^{-4} \Rightarrow W = 1.92 \pi \times 10^{-4} J$$

34. A mixture of carbon dioxide and oxygen has volume  $8310 \text{ cm}^3$ , temperature  $300 \text{ K}$ , pressure  $100 \text{ kPa}$  and mass  $13.2 \text{ g}$ . The number of moles carbon dioxide and oxygen gases in the mixture respectively are \_\_\_\_\_

- 1) 0.15 and 0.18    2) 0.25 and 0.08    3) 0.21 and 0.12    4) 0.13 and 0.20

**Key: 3**

**Sol:**  $PV = (n_1 + n_2)RT$

$$\Rightarrow 10^5 \times 8310 \times 10^{-6} = (n_1 + n_2)8.31 \times 300$$

$$\Rightarrow n_1 + n_2 = 0.3333 \quad \text{---(1)}$$

And  $m_1 + m_2 = 13.2$

$$\Rightarrow n_1(mw_1) + n_2(mw_2) = 13.2$$

$$\Rightarrow 44n_1 + 32n_2 = 13.2 \dots\dots(2)$$

From (1) & (2)

$$\therefore n_1 = 0.2112 \cong 0.21$$

$$n_2 = 0.12$$

35. If an air bubble of diameter  $2 \text{ mm}$  rises steadily through a liquid density  $200 \text{ kg / m}^3$  at a rate of  $0.5 \text{ cm / s}$ , then the coefficient of viscosity of liquid is \_\_\_\_\_ Poise. (Take

$$g = 10 \text{ m / s}^2)$$

- 1) 0.88                      2) 8.8                      3) 88.8                      4) 0.088

**Key: 1**

**Sol:**  $mg = 6\pi\eta rvt$

$$\Rightarrow \rho \left( \frac{4}{3} \pi r^3 \right) g = 6\pi\eta rvt$$

$$\eta = \frac{4}{4. \epsilon} \cong \eta = 0.88$$

36. A spherical ball of mass 2 kg falls from a height of 10 m and is brought to rest after penetrating 10 cm into sand. The average force exerted by sand on the ball is \_\_\_\_\_ N.
- 1) 1980                      2) 2020                      3) 2000                      4) 1000

**Key: 3**

**Sol:**  $W_g + W_{sand} = \Delta k$   
 $\Rightarrow mgh + F_{sand}(x) = 0$   
 $\Rightarrow x \times 10 \times 10 = F(10 \times 10^{-2})$   
 $\Rightarrow F = \frac{20}{100 \times 10^{-2}} \Rightarrow F = 2000N$

37. An electromagnetic wave travels in free space the x-direction. At a particular point in space and time,  $\vec{B} = 2 \times 10^{-7} \hat{j}$  T is associated with this wave. The value of corresponding electric field  $\vec{E}$  at this point is \_\_\_\_\_ V/m.
- 1)  $60 \hat{k}$                       2)  $-60 \hat{k}$                       3)  $30 \hat{k}$                       4)  $-600 \hat{k}$

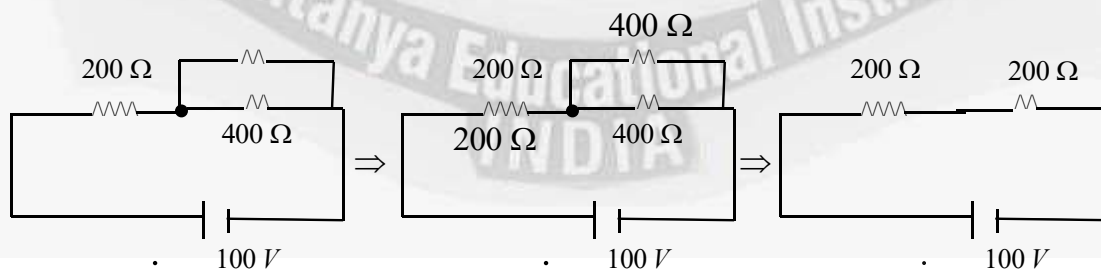
**Key: 2**

**Sol:**  $\vec{E} = \vec{B} \times \vec{C} \Rightarrow$  so direction of  $\vec{E}$  is  $(-\hat{k})$   
 But  $\frac{E}{B} = C \Rightarrow |E| = 2 \times 10^{-1} \times 3 \times 10^8 \Rightarrow |E| = 60$   
 $\therefore -60\hat{k}$

38. Two resistors of  $200 \Omega$  and  $400 \Omega$  are connected in series with a battery of 100 V. A bulb rated at 200 V, 100 W is connected across the  $400 \Omega$  resistance. The potential drop across the bulb is \_\_\_\_\_ V.
- 1) 25                      2) 50                      3) 66.6                      4) 100

**Key: 2**

**Sol:**



$\therefore$  potential across bulb is 50V

$$P = VI \Rightarrow 100 = 200 \times i \Rightarrow i = \frac{1}{2}, \quad P = i^2 R \Rightarrow 100 = \frac{1}{4} \times R \Rightarrow R_{Bulb} = 400\Omega$$

39. Two metal plates (A, B) are kept horizontally with separation of  $\left(\frac{12}{\pi}\right) \text{cm}$ , with plate A on the top. An atomizer jet sprays oil (density  $1.5 \text{ g/cm}^3$ ) droplets of radius 1 mm horizontally. All oil droplets carry a charge  $5 \text{ nC}$ . The potentials  $V_A$  and  $V_B$  are required on plates A and B respectively in order to ensure the droplets do not descend. The values of  $V_A$  and  $V_B$  are \_\_\_\_\_

(Neglect the air resistance to the droplets and take  $g = 10 \text{ m/s}^2$ )

- 1) 100 V and 580 V                      2) 580 V and 100 V  
3) 60 V and 400 V                      4) 0 V and -200 V

**Key: 1**

**Sol:**

$$\begin{array}{c} \text{-----} \quad A(-) \\ Fe \uparrow \downarrow mg \end{array}$$

$$\begin{array}{c} \text{-----} \quad B(+) \\ (V_B - V_A) \end{array}$$

$$Fe = mg \Rightarrow Eq = mg$$

$$\Rightarrow q \left( \frac{\Delta V}{d} \right) = mg$$

$$\Rightarrow 5 \times 10^{-9} \times \frac{\Delta V \times \pi}{12 \times 10^{-2}} = \rho \times \frac{4}{3} \pi R^3 \times g$$

$$\Rightarrow \frac{5}{12} \times 10^{-7} \times \Delta V = \frac{4}{3} \times \frac{1.5 \times 10^{-3}}{10^{-6}} \times 10^{-9} \times 10$$

$$\Rightarrow \frac{5}{12} \times 10^{-7} \times \Delta V = \frac{4}{3} \times 1.5 \times 10^{-6} \times 10 \Rightarrow \frac{5}{12} \times 10^{-1} \times \Delta V = 20$$

$$\Rightarrow \Delta V = 480V$$

$$\therefore V_B - V_A = 480V$$

40. Two point charges  $8 \mu\text{C}$  and  $-2 \mu\text{C}$  are located at  $x = 2 \text{ cm}$  and  $x = 4 \text{ cm}$ , respectively on the x-axis. The ratio of electric flux due to these charges through two spheres of radii 3 cm and 5 cm with their centers at the origin is \_\_\_\_\_

- 1) 4 : 1                      2) 3 : 4                      3) 4 : 3                      4) 4 : 5

**Key: 3**

**Sol:**

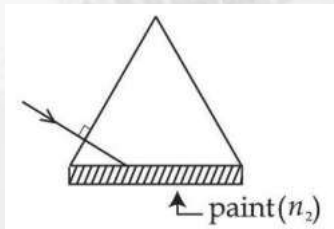


$$\phi_1 = \frac{q_1}{\epsilon_0} \Rightarrow \phi_1 = \frac{8}{\epsilon_0} \quad \dots (1)$$

$$\phi_2 = \frac{q_2 - q_1}{\epsilon_0} = \frac{8 - 2}{\epsilon_0} = \frac{6}{\epsilon_0} \quad \dots (2)$$

$$\therefore \frac{\phi_1}{\phi_2} = \frac{\frac{8}{\epsilon_0}}{\frac{6}{\epsilon_0}} = \frac{4}{3}$$

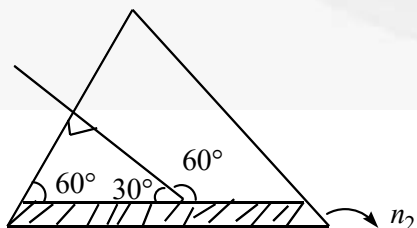
41. One side of an equilateral prism is painted by a transparent material of refractive index  $n_2$ . The refractive index of prism is 1.6. The minimum value of  $n_2$  required for total internal reflection from painted face is \_\_\_\_\_



- 1)  $3\sqrt{3}/1.6$     2)  $\sqrt{3}$     3)  $3.2/\sqrt{3}$     4)  $4\sqrt{3}/5$

**Key:** 4

**Sol:**



$$i = 60^\circ$$

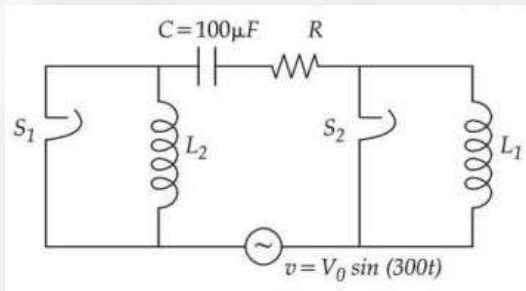
$$n_1 \sin i = n_2 \sin 90^\circ$$

$$\Rightarrow 1.6 \times \sin 60^\circ = n_2$$

$$n_2 = \frac{\sqrt{3}}{2} \times 1.6 \Rightarrow 0.8 \times \sqrt{3} \Rightarrow 1.38$$

$$\text{Ily } \frac{4\sqrt{3}}{5} \text{ also } 1.38$$

42. The figure given below shows an LCR series circuit with two switches  $S_1$  and  $S_2$ . When switch  $S_1$  is closed keeping  $S_2$  open, the phase difference ( $\phi$ ) between the current and source voltage is  $30^\circ$  and phase difference is  $60^\circ$  when  $S_2$  is closed keeping  $S_1$  open. The value of  $(3L_1 - L_2)$  is \_\_\_\_\_ H.



- 1)  $\frac{9}{2}$       2)  $\frac{2}{9}$       3)  $\frac{1}{3}$       4) 3

**Key: 2**

**Sol:** When  $S_1$  open &  $S_2$  closed  $\rightarrow \tan 30^\circ = L_1\omega - \frac{1}{\omega C}$  ..... (1)

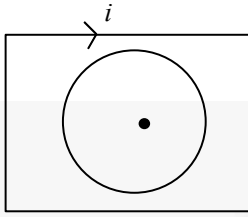
When  $S_2$  open &  $S_1$  closed  $\rightarrow \tan 60^\circ = L_2\omega - \frac{1}{\omega C}$  ..... (2)

$$\frac{1}{2} \Rightarrow \text{we get } \frac{1}{3} = \frac{L_1\omega - \frac{1}{\omega C}}{L_2\omega - \frac{1}{\omega C}} \Rightarrow L_2\omega - \frac{1}{\omega C} = 3L_1\omega - \frac{3}{\omega C}$$

$$\Rightarrow (3L_1 - L_2)\omega = \frac{2}{\omega C} \Rightarrow 3L_1 - L_2 = \frac{2}{\omega^2 C} \Rightarrow \frac{2}{9}$$

43. A circular current loop of radius  $R$  is placed inside square loop of side length  $L (L \gg R)$  such that they are co-planar and their centers coincide. The permeability of free space is  $\mu_0$ . The mutual inductance between circular loop and square loop is \_\_\_\_\_

- 1)  $2\sqrt{2} \frac{\mu_0 L^2}{R}$       2)  $\sqrt{2} \frac{\mu_0 L^2}{R}$       3)  $\sqrt{2} \frac{\mu_0 R^2}{L}$       4)  $2\sqrt{2} \frac{\mu_0 R^2}{L}$

**Key: 4****Sol:**

$$B = \left[ \frac{\mu_0 i}{4\pi d} (\sin \alpha + \sin \beta) \right] 4$$

$$B = \frac{\mu_0 i}{4\pi \left( \frac{L}{2} \right)} \times 2 \sin 45^\circ \Rightarrow \left[ \frac{\mu_0 i}{\sqrt{2}\pi L} \right] 4$$

$$\phi = B \times A \Rightarrow \frac{\mu_0 i}{\sqrt{2}\pi L} \times \pi R^2 \times 4$$

$$\phi = \frac{2\sqrt{2}\mu_0 i R^2}{L} \Rightarrow M = \frac{2\sqrt{2}\mu_0 R^2}{L}$$

44. The binding energy per nucleon of  ${}_{83}^{209}\text{Bi}$  is \_\_\_\_\_ MeV

$$\left\{ \text{Take } m\left({}_{83}^{209}\text{Bi}\right) = 208.980388 \text{ u}, m_p = 1.008665 \text{ u}, 1\text{u} = 931 \text{ MeV} / c^2 \right\}$$

- 1) 7.48                      2) 7.84                      3) 8.79                      4) 6.94 .

**Key: 2**

**Sol:**  $83 {}_1^1\text{H} + 126 {}_0^1\text{n} \rightarrow {}_{83}^{209}\text{Bi}$ ,  $\Delta m = 83 \times 1.007825 + 126(1.008665) - 208.980388$

$$\Delta E = (\Delta m)931 \quad \Delta m = 83.649475 + 127.09179 - 208.980388$$

$$\frac{BE}{A} = 1639.3764 / 209 \Rightarrow 7.84$$

45. The equation of motion of a particle is given by  $x = a \sin(50t + \pi/3) \text{ cm}$ . The particle will come to rest at time  $t_1$  and it will have zero acceleration at time  $t_2$ . The  $t_1$  and  $t_2$  respectively are \_\_\_\_\_

- 1)  $\frac{\pi}{300} \text{ s}, \frac{\pi}{75} \text{ s}$       2)  $\frac{\pi}{75} \text{ s}, \frac{\pi}{300} \text{ s}$       3)  $\frac{\pi}{300} \text{ s}, \frac{\pi}{25} \text{ s}$       4)  $\frac{\pi}{50} \text{ s}, \frac{\pi}{100} \text{ s}$

**Key: 1**

**Sol:**  $x = a \sin\left(50t + \frac{\pi}{3}\right)$ ;  $\frac{dx}{dt} = V = 0 \Rightarrow a \cos\left(50t + \frac{\pi}{3}\right) \times 50 = 0 \Rightarrow \cos\left(50t + \frac{\pi}{3}\right) = 0$

$$\Rightarrow 50t = \frac{\pi}{2} - \frac{\pi}{3} \Rightarrow 50t = \frac{\pi}{6} \Rightarrow t = \frac{\pi}{300}$$

$$a = \sin\left(50t + \frac{\pi}{3}\right) = 0 \Rightarrow 50t + \frac{\pi}{3} = \pi \Rightarrow 50t = \frac{2\pi}{3} \Rightarrow t = \frac{\pi}{75}$$

### SECTION-II (NUMERICAL VALUE TYPE)

This section contains **5 Numerical Value Type Questions**. The Answer should be within **0 to 9999**. If the Answer is in **Decimal** then round off to the **Nearest Integer** value (Example i.e. If answer is above **10** and less than **10.5** round off is **10** and If answer is from **10.5** and less than **11** round off is **11**).

**Marking scheme: +4 for correct answer, 0 if not attempt and -1 in all other cases**

46. If a Young's double slit experiment, the intensity at some point on the screen is found to be  $\frac{3}{4}$  times of the maximum of the interference pattern. The path difference between the interfering waves at this point is  $\frac{\lambda}{x}$  where  $\lambda$  is wavelength of the incident light. The value of  $x$  is

**Key : 6**

$$\text{Sol : } I = I_{\max} \cos^2 \frac{\theta}{2}; \frac{3}{4} I_{\max} = I_{\max} \cos^2 \frac{\theta}{2} \Rightarrow \frac{\sqrt{3}}{2} \Rightarrow \frac{\theta}{2} = 30^\circ \Rightarrow \theta = 60^\circ$$

$$\Delta\theta = \frac{2\pi}{\lambda}(\Delta x) \Rightarrow \frac{\pi}{3} = \frac{2\pi}{\lambda}(\Delta x) \Rightarrow \Delta x = \lambda / 6$$

47. Using Bohr's model, calculate the ratio of the magnetic fields generated due to the motion of the electrons in the 2<sup>nd</sup> and 4<sup>th</sup> orbits of hydrogen atom.....

**Key: 32**

$$\text{Sol: } B = \frac{\mu_0 \vec{i}}{2\pi r}, \text{ But } \vec{i} = \frac{qV}{T} \Rightarrow \vec{i} = \frac{eV}{2\pi r}$$

$$B = \frac{\mu_0}{2\pi r} \left( \frac{eV}{2\pi r} \right) \Rightarrow \vec{B} = \frac{V}{r^2}, \text{ But } V \propto \frac{z}{n}, r \propto \frac{n^2}{z}$$

$$\therefore B = \frac{\frac{z}{n}}{\frac{n^2}{z^2}} \Rightarrow B = \frac{z^3}{n^5} \Rightarrow \frac{B_2}{B_4} = \frac{(4)^5}{(2)^5} \Rightarrow \frac{(2)^{10}}{(2)^5} \Rightarrow 32$$

48. 5 moles of unknown gas is heated at constant volume from 10°C to 20°C. The molar specific heat of this gas at constant pressure  $c_p = 8 \text{ cal/mol} \cdot ^\circ\text{C}$  and  $R = 8.36 \text{ J/mol} \cdot ^\circ\text{C}$ .

The change in the internal energy of the gas is.....calorie

**Key: 300**

$$\text{Sol: } \Delta u = nC_v \Delta \theta \Rightarrow \Delta u = 5(C_p - R) \times \Delta \theta \Rightarrow \Delta u = 5 \left[ 8 - \frac{8.36}{4.18} \right] \times 10$$

$$\Delta u = 5(8 - 2) \times 10 \Rightarrow 300$$

49. If sunlight is focused on a paper using convex lens, it starts burning the paper in shortest time when the lens is kept at 30 cm above the paper. If the radius of curvature of the lens is 60cm then the refractive index of the lens material is  $\frac{\alpha}{10}$ . The value of  $\alpha$  is.....

**Key:** 20

$$\text{Sol: } \frac{1}{v} - \frac{1}{u} = (\mu - 1) \left( \frac{1}{R_1} - \frac{1}{R_2} \right)$$

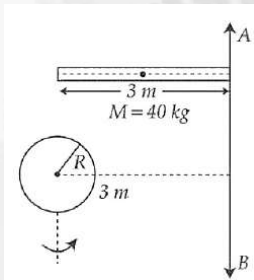
$$\therefore \frac{1}{V} = (\mu - 1) \left( \frac{2}{R} \right)$$

$$\Rightarrow u = \infty, V = 30, R = 60 \text{ cm}$$

$$\Rightarrow \frac{1}{30} = (\mu - 1) \left( \frac{2}{60} \right) \Rightarrow \mu = 2$$

$$\therefore 2 = \frac{\alpha}{10} \Rightarrow \alpha = 20$$

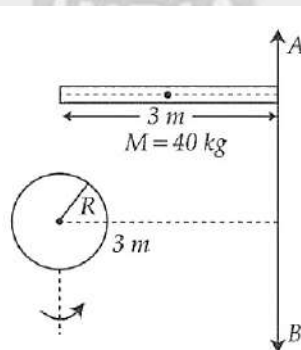
50. Moment of inertia about an axis AB for a rod of mass 40kg and length 3m is same as that of a solid sphere of mass of 10kg and radius R about an axis parallel to AB axis with separation of 3m as shown in figure below. The value of R is given as  $\sqrt{\frac{\alpha}{2}}$ . The value of  $\alpha$  is.....



**Key:** 60

$$\text{Sol: } I_{\text{Rod}} = I_{\text{Solid sphere}}$$

$$\frac{Ml^2}{3} = \frac{2}{5}mr^2 \Rightarrow \frac{(40) \times 9^3}{3} = \frac{2}{5} \times 10 \times R^2 \Rightarrow 120 = 4R^2 \Rightarrow r = \sqrt{\frac{60}{2}}$$



**CHEMISTRY****Max Marks: 100****SECTION-I  
(SINGLE CORRECT ANSWER TYPE)**

This section contains **20 Multiple Choice Questions**. Each question has 4 options (1), (2), (3) and (4) for its answer, out of which **ONLY ONE** option can be correct.

**Marking scheme: +4 for correct answer, 0 if not attempted and -1 in all other cases.**

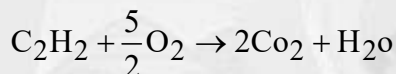
51. The ratio of mass percentage (W/W) C:H in a hydrocarbon is 12:1 It has two carbon atoms. The weight (in g) of  $CO_2$  (g) formed when 3.38g of this hydrocarbon is completely burnt in Oxygen is : (Given: Molar mass in  $mol^{-1}$  (C: 12,H:1, O:16)
- 1) 5.68                      2)11.44                      3) 22.74                      4)17.05

**Key 2****Sol:** Molecular formula =  $C_2H_x$ 

Given the mass percentage ratio of C:His 12 :1

$$\text{Now } \frac{\text{Mass of C}}{\text{Mass of H}} = \frac{12}{1} \Rightarrow \frac{24}{x} = \frac{12}{1} ; x = 2$$

→ combustion reaction



$$26g \rightarrow 2 \times 44 \text{ gms}$$

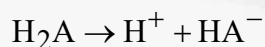
$$3.38 \text{ gms} \rightarrow ?(x)$$

$$x = \frac{88 \times 3.38}{26} \Rightarrow 11.44 \text{ gms}$$

∴ The mass of  $CO_2$  produced is – 11.44 gms

52. The first and second ionization constants of weak dibasic acid  $H_2A$  are  $8.1 \times 10^{-8}$  and  $1.0 \times 10^{-13}$  respectively. 0.1 mol of  $H_2A$  was dissolved in 1L of 0.1 M HCl solution. The concentration of  $HA^-$  in the resultant solution is:

- 1) 0.1M                      2)  $9.53 \times 10^{-6} M$                       3)  $8.1 \times 10^{-8} M$                       4)  $1.0 \times 10^{-13} M$

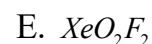
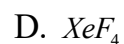
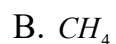
**Key 3****Sol:**

$$K_{a1} = \frac{(H^+)(HA^-)}{(H_2A)}$$

$$8.1 \times 10^{-8} = \frac{0.1 \times (HA^-)}{0.1}$$

$$(HA^-) = 8.1 \times 10^{-8} m$$

53.  $SF_4$  is isostructural with:



Choose the correct answer from the option given below:

1) C only

2) C and E only

3) A and D only

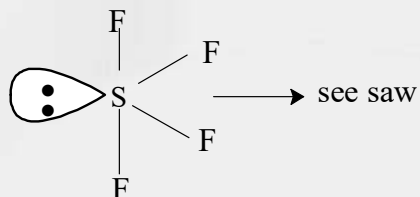
4) B and E only

Key 2

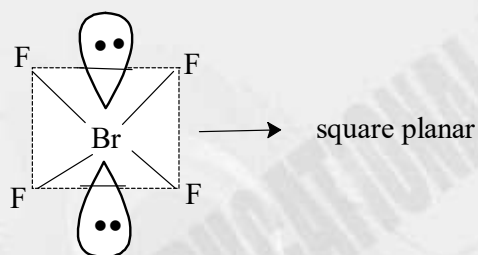
Sol molecular

Structure

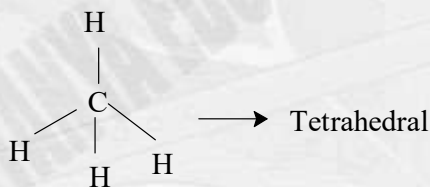
\*)  $SF_4$



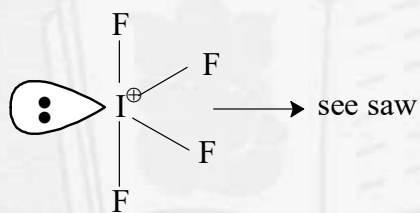
A)  $BrF_4^-$



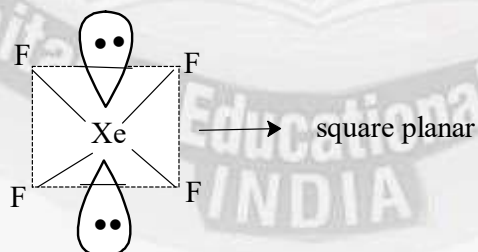
B)  $CH_4$



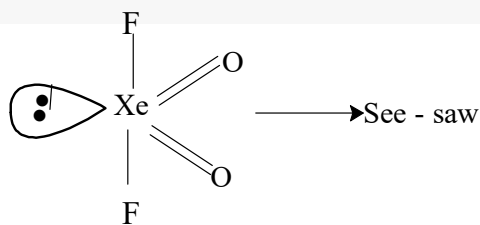
C)  $IF_4^+$



D)  $XeF_4$



E)  $XeO_2F_2$



54. Gas 'A' undergoes change from state 'X' to state 'Y', in this process, the heat absorbed and work done by the gas is 10J and 18J respectively, now gas is brought back to state 'X' by another process during which 6 J of heat is evolved. In the reverse process of 'Y' to 'X'

- 1) 18 J of the work is done by the gas 'A'
- 2) 2J of the work is done by the gas 'A'
- 3) 12J of the work is done on the gas 'A' by the surrounding.
- 4) 14J of the work is done on the gas 'A' by the surrounding

**Key 4**

**Sol:**

$$\Delta u = Q - W$$

$$= 10 - 18 = -8J \quad (x \rightarrow y)$$

from  $y \rightarrow x$

$$\Delta u = +8J$$

$$\text{heat evolved } Q = -6J$$

$$\Delta u = Q - W$$

$$8J = -6 - w$$

$$w = -14J$$

Work is done on the gas A by the surroundings

55. Solution A is prepared by dissolving 1 g of a protein (molar mass = 50000 g mol<sup>-1</sup>) in 0.5 L of water at 300K. its osmotic pressure is x bar. Solution B is made by dissolving 2g of same protein in 1L of water at 300 K. Osmotic pressure of solution B is y bar. Entire solution of A is mixed with entire solution of B at same temperature. The osmotic pressure solution is Z bar  $x, y$  and respectively are ( $R = 0.083 \text{ L bar mol}^{-1} \text{ K}^{-1}$ )

- 1)  $9.96 \times 10^{-4}; 9.96 \times 10^{-4}; 9.96 \times 10^{-4}$
- 2)  $9.96 \times 10^{-4}; 9.96 \times 10^{-4}; 19.92 \times 10^{-4}$
- 3)  $4.98 \times 10^{-4}; 4.98 \times 10^{-4}; 9.96 \times 10^{-4}$
- 4)  $4.98 \times 10^{-4}; 4.98 \times 10^{-4}; 4.98 \times 10^{-4}$

**Key 1**

**Sol**

$$\pi = C R T$$

$$\pi = \frac{n}{v} R T$$

$$= \frac{1}{0.5} R T$$

$$\pi_1 = 2 R T$$

$$= 9.96 \times 10^{-4}$$

**Solution: B**

$$\pi = C R T$$

$$\pi = \frac{2}{1} R T$$

$$\pi_2 = 2 R T$$

$$\pi = 2 R T$$

$$= 9.96 \times 10^{-4}$$

A & B isotonic Solution

So osmotic pressure is same

$$\text{Mixture A and B } \pi_3 = (C_1 + C_2) R T = \frac{3}{1.5} R T$$

$$\pi_1 = \pi_2 = \pi_3 = 2 R T$$

$$= \frac{2}{50000} \times 0.083 \times 300 \text{ L bar g}^{-1} \text{ k}^{-1}$$

$$9.96 \times 10^{-4} \text{ atm}$$

56. At 25°C, 20.0 ml of 0.2 M weak monoprotic acid HX is titrated against 0.2 M NaOH. The  $p^H$  of the solution (a) at the start of the titration (when NaOH has not been added) and (b) when 10 ml of NaOH is added respectively are:

Given :  $K_a = 5 \times 10^{-4}$

$$pK_a = 3.3$$

$$\alpha \ll 1$$

- 1) 0.7, 2.0      2) 2.0, 3.3      3) 1.1, 2.2      4) 3.0, 2.2

**Key 2**

**Solution:**

$$(a) p^4 = \frac{pK_a}{2} - \frac{\log c}{2} = \frac{3.3}{2} - \frac{\log(0.2)}{2} = 1.65 + \frac{0.6989}{2} = 1.65 + 0.349 = 1.999 \approx 2$$

(b)

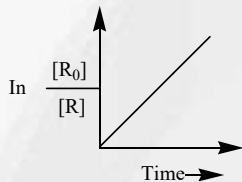


$$p^4 = p^{ka} + \log \frac{(x^-)}{(Hx^+)}$$

$$= 3.3$$

57. Consider the reaction  $aX \rightarrow bY$ , for which the rate constant at  $30^\circ\text{C}$  is  $1 \times 10^{-3} \text{ mol}^{-1} \text{ L s}^{-1}$ . Which of the following statements are true?

- A. When concentration of 'X' is increased to four times, the rate of reaction becomes 16 times
- B. The reaction is a second order reaction
- C. The half-life period is independent of the concentration of X
- D. Decomposition of  $\text{N}_2\text{O}_5$  is an example of the above reaction.



E. The graph is valid for the above reaction

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

**Key 1**

**Solution:**

$$K = 10^{-3} \text{ mol}^{-1} \text{ L S}^{-1} \Rightarrow \text{second order}$$

$$\text{Rate}_1 = K[x]^2$$

$$\text{Rate}_2 = K[4x]^2 \quad \text{Rate}_2 = 16 \text{ Rate}_1$$

$$t_{1/2} = \frac{1}{Ka}$$

(First order)

$$Kt = \ln \frac{R_0}{R}$$

$$\ln \frac{R_0}{R} = kt$$

$$y = mx$$

58. The correct set that contain all kinds (basic, acids, amphoteric and neutral) of Oxides is:

- 1)  $\text{Na}_2\text{O}, \text{K}_2\text{O}, \text{Al}_2\text{O}_3$  and  $\text{As}_2\text{O}_3$     2)  $\text{Al}_2\text{O}_3, \text{As}_2\text{O}_3, \text{CO}$  and  $\text{NO}$
- 3)  $\text{K}_2\text{O}, \text{Cl}_2\text{O}_7, \text{As}_2\text{O}_3$  and  $\text{NO}$     4)  $\text{Na}_2\text{O}, \text{N}_2\text{O}, \text{Al}_2\text{O}_3$  and  $\text{CO}$

**Key 3**

**Sol:**

$\text{K}_2\text{O}$  ,     $\text{Cl}_2\text{O}_7$  ,  $\text{As}_2\text{O}_3$  ,     $\text{NO}$   
 (basic)    (acidic)    (amphoteric)    (neutral)

Option : 3

59. Given below are two statements:

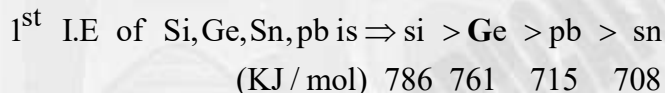
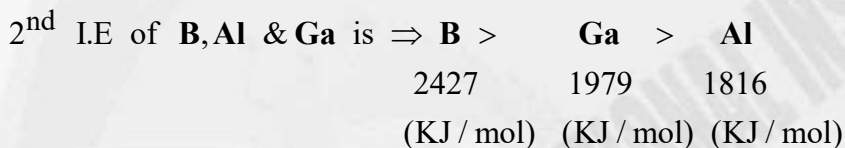
Statement I: The second ionization enthalpy of B, Al and Ga is in order of  $B > Al > Ga$ .

Statement II: The correct order in terms of first ionization enthalpy is  $Si < Ge < Pb < Sn$  in the light of the above statement, choose the correct answer from the option given below:

- 1) Both statement I and statement II are true
- 2) Both statement I and statement II are false
- 3) Statement I is true but statement II is false
- 4) Statement I is false but statement II is true

**Key 2**

**Sol:**

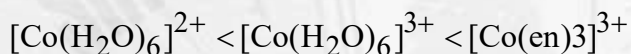


So Both S – I & S – II are false

60. Given below are two statements:

Statement I: Among Zn, Mn, Sc and Cu, the energy required to remove the third valence electron is highest for Zn and lowest for Sc.

Statement II: The correct order of the following complexes in terms of CFSE is



In the light of the above statement, choose the correct answer from the option given below:

- 1) Both statement I and statement II are true
- 2) Both statement I and statement II are false
- 3) Statement I and statement II is false
- 4) Statement I is false but statement II is true

**Key 1**

**Sol:**

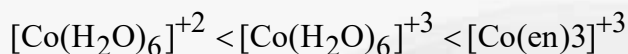
Among Zn, Mn, Sc & Cu

The  $\text{IE}_3$  is highest for Zn(3837 kg /mol)

Lowest for Sc (2393 kg/mol)

- CFSE  $\propto$  charge on central metal ion
- For same charge on central atom

CFSE  $\propto$  strength of ligands



So : Both S-I & S-II Are true

61. Which of the following complexes will show coordination isomerism?

- A.  $[\text{Ag}(\text{NH}_3)_2][\text{Ag}(\text{CN})_2]$                       B.  $[\text{Co}(\text{NH}_3)_6][\text{Cr}(\text{CN})_6]$   
 C.  $[\text{Co}(\text{NH}_3)_6][\text{Co}(\text{CN})_6]$                       D.  $[\text{Fe}(\text{NH}_3)_6][\text{Co}(\text{CN})_6]$   
 E.  $[\text{Co}(\text{NH}_3)_6][\text{Fe}(\text{CN})_6]$

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

**Key 2**

**Sol:** In A & C central metal atoms are same

Requirements: at least two different metal centres and both cationic & anionic-coordination spheres.

62. Complete combustion of X g of an organic compound gave 0.25g of  $\text{CO}_2$  and 0.12 g of  $\text{H}_2\text{O}$ . If the % of carbon is 25% and of hydrogen is 4.89%, then  $X = \dots \times 10^{-3}$ g

(Nearest integer) (Molar mass of C, H and O are 12,1 and 16 g  $\text{mol}^{-1}$  respectively)

- 1) 273                      2) 27                      3) 2730                      4) 227

**Key 1**

**Sol:**

$$\text{Mass of C} = \frac{12}{44} \times 0.25 \text{ gm}$$

$$= 0.06 \text{ gm}$$

$$\% \text{ of C} = \frac{\text{mass of C}}{x} \times 100$$

$$25 = \frac{0.06}{x} \times 100$$

$$x = 0.2727 \text{ gm}$$

$$\text{so } \therefore 273 \times 10^{-3}$$

$$273$$

$$\text{Mass of H} = \frac{2}{18} \times 0.12 \text{ gm}$$

$$= 0.01 \text{ gm}$$

$$\% \text{ of H} = \frac{\text{mass of H}}{x} \times 100$$

$$4.89 = \frac{0.01}{x} \times 100$$

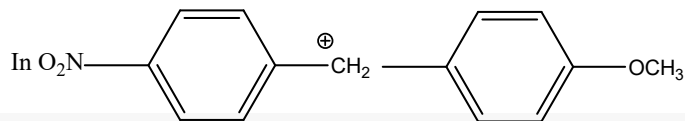
$$x = 0.2727 \text{ gm}$$

$$\text{so } \therefore 273 \times 10^{-3}$$

$$273$$

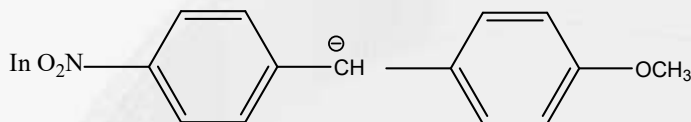
63. Given below are two statements:

**Statement I:**



, The carbocation is stabilized by +R effect of  $-OCH_3$  group

**Statement II:**



, The carbocation is stabilized by -R effect of group  $-NO_2$

In the above statement, choose the correct answer from the option given below:

- 1) Both statement I and statement II are true
- 2) Both statement I and statement II are false
- 3) Statement I and statement II is false
- 4) Statement I is false but statement II is true

**Key 1**

**Sol:** Both S-I & S-II are true

The carbocation is stabilized by the +R effect of  $-OCH_3$  group

The carbanion is

Stabilized by -R effect of  $-NO_2$  group

Stabilized of  $C.C^{\oplus} \propto \frac{ERG}{EWG}$

Stability of  $C.C^{\ominus} \propto \frac{EWG}{ERG}$

64. The compound (X) on

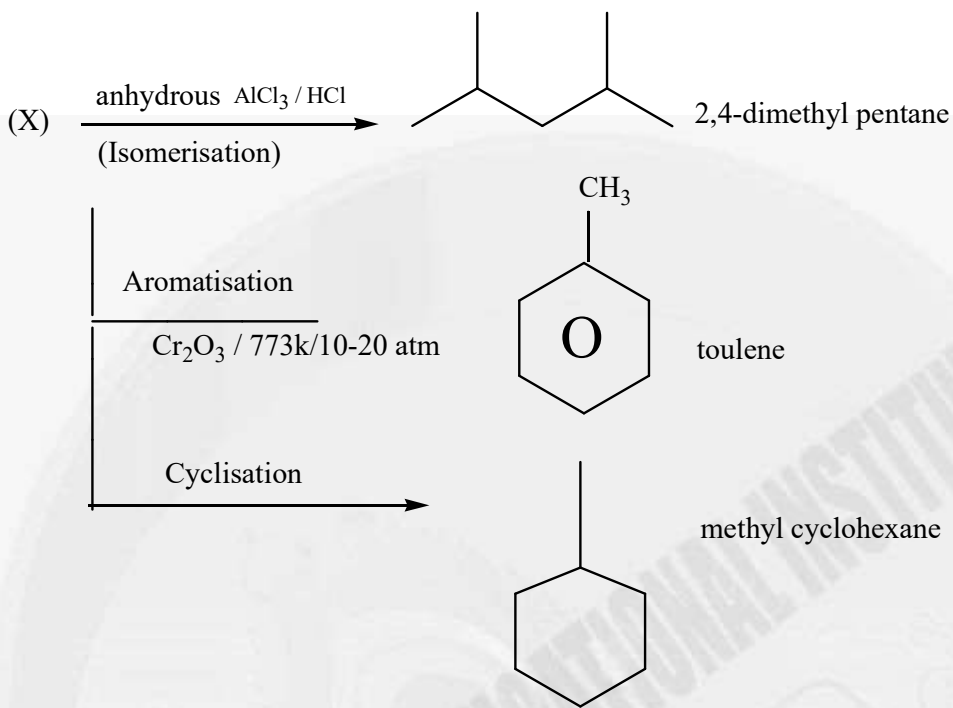
(i) On heating in the presence of anhydrous  $AlCl_3$  and HCl gas gives 2,4-dimethyl pentane

(ii) Aromatization gives toluene and

(iii) Cyclisation gives methyl cyclohexane

The correct name of compound (X) is

- 1) Hept-2-ene
- 2) Hept-1,3,5-triene
- 3) Heptane
- 4) Hept-2,4,6-triene

**Key 3****Sol:**

X = heptane

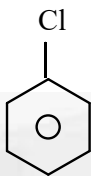
65. Correct statement regarding, alkyl halides (R-X) among the following are:
- A. Alcohol being less polar solvent as compared to water, alcoholic KOH favours elimination reaction with R-X.
- B. Order of reactivity towards  $\text{S}_{\text{N}}^1$  mechanism  $\text{C}_6\text{H}_5-\text{CH}_2-\text{Cl} > \text{C}_6\text{H}_5-\text{CHCl}-\text{C}_6\text{H}_5$
- C. Non substituted aryl halides exhibit properties similar to alkyl halides
- D. Vinyl chloride is an example of haloalkene and allyl chloride is an example of haloalkyne
- E. R-Cl can be prepared by reaction R-OH with  $\text{SOCl}_2$  but Ar-Cl cannot be prepared by reacting, Ar-OH with  $\text{SOCl}_2$
- 1) A, B and C only    2) A and D only    3) A and E only    4) D and E only

**Key 3**

**Sol:** Alcohol being less polar solvent than water due to it has two highly polar oxygen – hydrogen (O-H) bonds, alcoholic. KOH favours elimination reaction with R-X

- A.  $\text{S}_{\text{N}}^1$  reactivity order  $\Rightarrow \text{C}_6\text{H}_5-\underset{\text{Cl}}{\text{CH}}-\text{C}_6\text{H}_5 > \text{C}_6\text{H}_5-\text{CH}_2-\text{Cl}$

In  $S_N1$  reaction the intermediate carbonation is stabilized by +R groups



B. Non substituted aryl halides

exhibit properties not similar to alkyl halides (R-X)

D Vinyl chloride ( $CH_2=CH-Cl$ ) is an example of a haloalkene, and allyl chloride ( $CH_2=CH-CH_2-Cl$ )

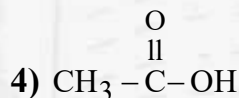
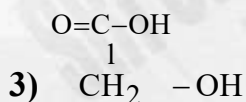
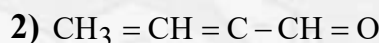
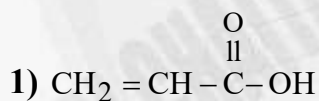
Is an example of haloalkane due to halogen is attached to  $sp^3$  carbon

E  $R-Cl$  can be prepared by



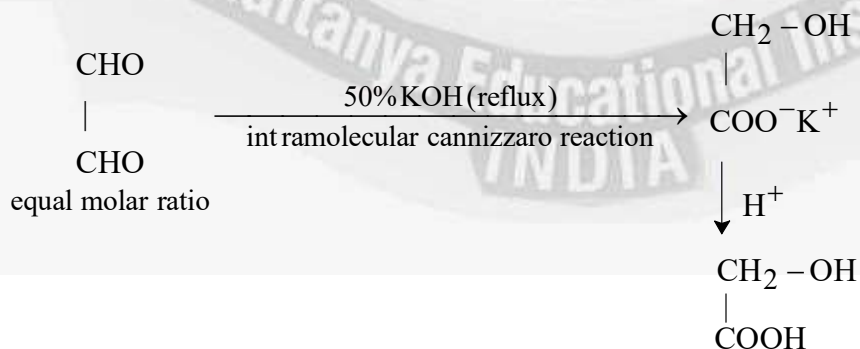
But  $ArCl$  not prepared by  $ArOH$  due to partial double bond between benzene ring and  $OH$

66. An organic compound "x" where molar ratio of C, O and H are equal, on treatment with 50% KOH under reflux followed by acidification produced "y" the most likely structure of "y" is: [Molar mass of 'x' is  $58 \text{ g mol}^{-1}$ ]



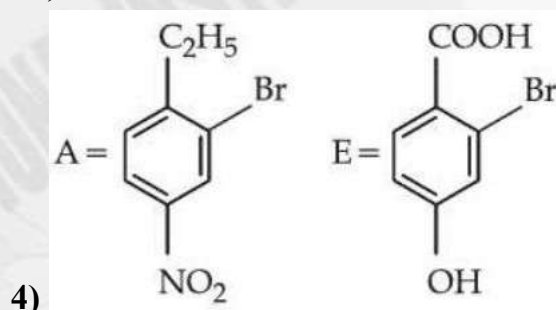
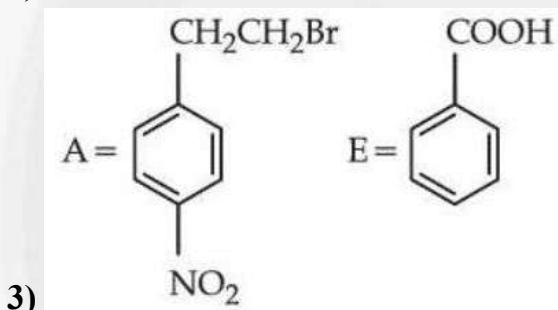
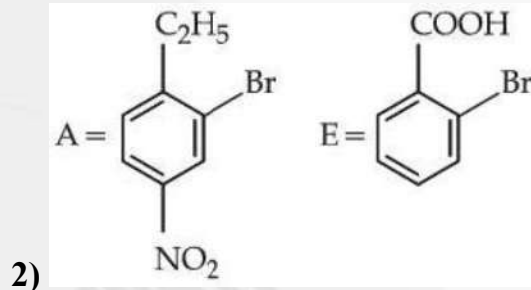
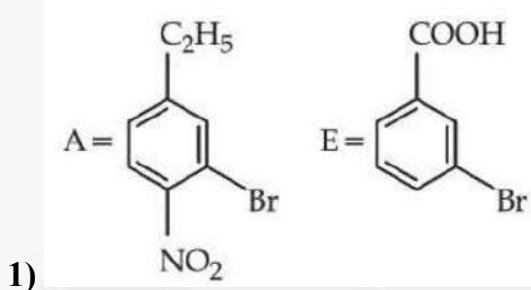
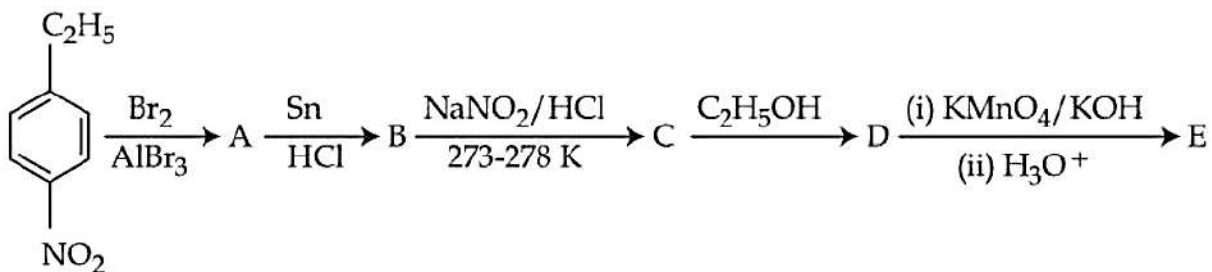
Key 3

Sol:



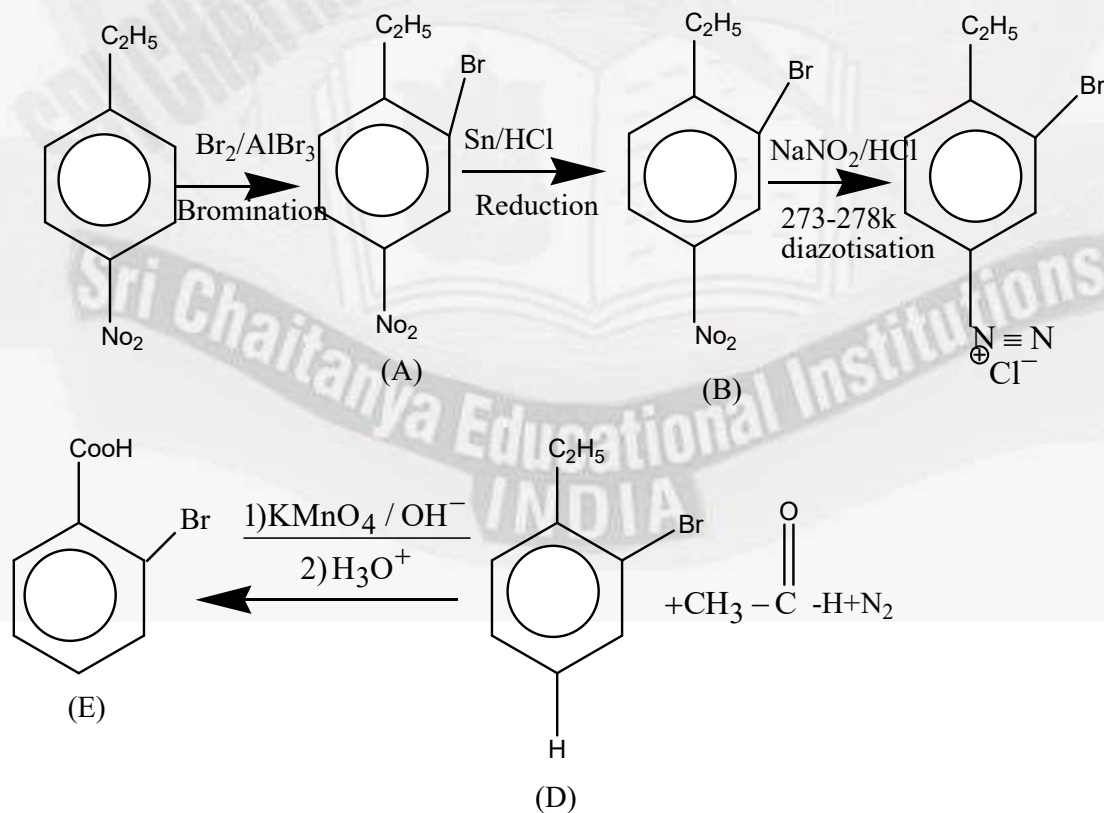


68. Identify compounds A and E in the following reaction sequence:



Key 2

Sol



69. Identify the correct pair having amino acid (A) and the hormone (B) that is iodinated derivative of the amino acid (A) (T and Y represent one letter code for amino acids)

Amino acid (A)	Hormone (B)
1) T	Insulin
2) T	Thyroxine
3) Y	Thyroxine
4) Y	Insulin

**Key 3**

**Sol NCERT(Line)**

Thyroxine produced in the thyroid gland is an iodinated derivative of amino acid tyrosine  
Amino acid(A) hormone (B)

Y thyroxine

70. Among,  $\text{Fe}^{2+}$ ,  $\text{Fe}^{3+}$ ,  $\text{Cr}^{2+}$  and  $\text{Zn}^{2+}$  the ion that shows positive borax bead test and with highest ionization enthalpy is:

1)  $\text{Fe}^{2+}$                       2)  $\text{Zn}^{2+}$                       3)  $\text{Cr}^{2+}$                       4)  $\text{Fe}^{3+}$

**Key 4**

**Sol**  $\text{Zn}^{2+}$  does not show borax bead test  $\text{Fe}^{3+}$  gives borax bead test with maximum I.E

$\therefore \text{Fe}^{3+}$  is the correct answer

### SECTION-II (NUMERICAL VALUE TYPE)

This section contains **5 Numerical Value Type Questions**. The Answer should be within **0 to 9999**. If the Answer is in **Decimal** then round off to the **Nearest Integer** value (Example i.e. If answer is above **10** and less than **10.5** round off is **10** and If answer is from **10.5** and less than **11** round off is **11**).

**Marking scheme: +4 for correct answer, 0 if not attempt and -1 in all other cases**

71. The surface of sodium metal is irradiated with radiation of wavelength  $x$  nm. The kinetic energy of ejected electrons is  $2.8 \times 10^{-20}$  J. The work function of sodium is 2.3 eV. The value of  $x$  is .....  $\times 10^2$  nm (Neatest integer)

(Given:  $h = 6.6 \times 10^{-34}$  Js;  $1\text{eV} = 1.6 \times 10^{-19}$  J;  $c = 3.0 \times 10^8 \text{ms}^{-1}$ )

**Key 500**

**Sol** 
$$\frac{6.6 \times 10^{-34} (3 \times 10^8)}{\lambda} = 2.3 (1.6 \times 10^{-19}) + 2.8 \times 10^{-20}$$

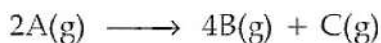
$$= 3.68 \times 10^{-19} + 2.8 \times 10^{-20}$$

$$= 36.8 \times 10^{-20} + 2.8 \times 10^{-20}$$

$$= 39.6 \times 10^{-20}$$

$$\lambda = \frac{6.6 \times 10^{-34} \times 3 \times 10^8}{39.6 \times 10^{-20}} = 0.5 \times 10^{-6} = 500 \times 10^{-9} = 500 \text{ nm}$$

72. Consider the following gas phase reaction being carried out in a closed vessel at 25°C



time (min)	total pressure of the system (mm Hg)
30	300
$\infty$	600

The pressure of C(g) at 30 minutes time interval would be.....mm Hg. (nearest integer)

Key 20



$$t = 0 \quad P_0 \quad 0 \quad 0$$

Sol  $t = 130 \quad P_0 - 2x \quad 4x \quad x$

$$t = \infty \quad 0 \quad 2P_0 \quad \frac{P_0}{2}$$

$$2P_0 + \frac{P_0}{2} = 600 \Rightarrow \frac{5P_0}{2} = 600 \Rightarrow P_0 = \frac{1200}{5} = 240$$

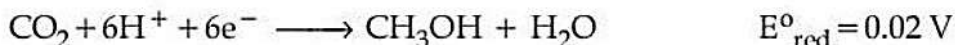
$$P_0 - 2x + 4x + x = 300$$

$$P_0 + 3x = 300$$

$$3x = 300 - 240$$

$$x = 20$$

73. Consider the following two half – cell reactions along with the standard reduction potential given:



A fuel cell was set up using the above two reactions such that the cell operates under the standard condition of 1 bar pressure and 298K temperature. The fuel cell works with 80% efficiency. If the work derived from the cell using 1 mol of CH<sub>3</sub>OH is used to compress an ideal gas isothermally against a constant pressure of 1kPa, then the change in the volume of the gas,  $\Delta V = \dots\dots\dots m^3$  (nearest integer) (Given  $F = 96500 \text{ C mol}^{-1}$ )

Key 560

**Sol**  $\Delta G = -nFE_{\text{cell}}^{\circ}$   $E_{\text{cell}}^{\circ} = E_{\text{C}}^{\circ} - E_{\text{A}}^{\circ} = 1.23 - 0.02$

$$= -6(96500)(1.21)$$

$$= 700590 \times \frac{80}{100}$$

$$= 564072\text{J}$$

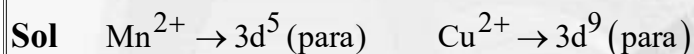
$$564072 = 10^3 [\Delta T]$$

$$\Delta T = 560\text{m}^3$$

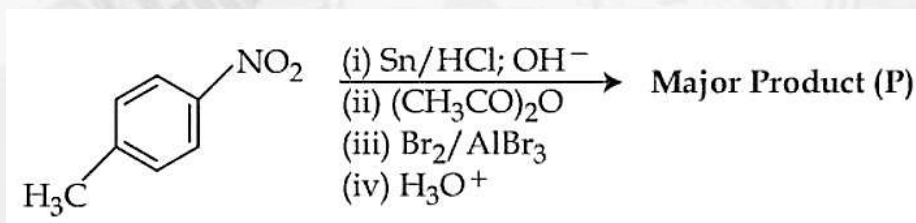
**74.** Number of paramagnetic ions among the following d – and f-block metal ions is.....

$\text{Mn}^{2+}, \text{Cu}^{2+}, \text{Zn}^{2+}, \text{Yb}^{2+}, \text{Sc}^{3+}, \text{La}^{3+}, \text{Gd}^{3+}, \text{Lu}^{3+}, \text{Ti}^{4+}, \text{Ce}^{4+}$  (Atomic number of Mn = 25, Cu = 29, Yb = 70, Sc = 21, La = 57, Gd = 64, Lu = 71, Ti = 22, Ce = 58)

**Key 3**



**75.** Consider the following reactions sequence

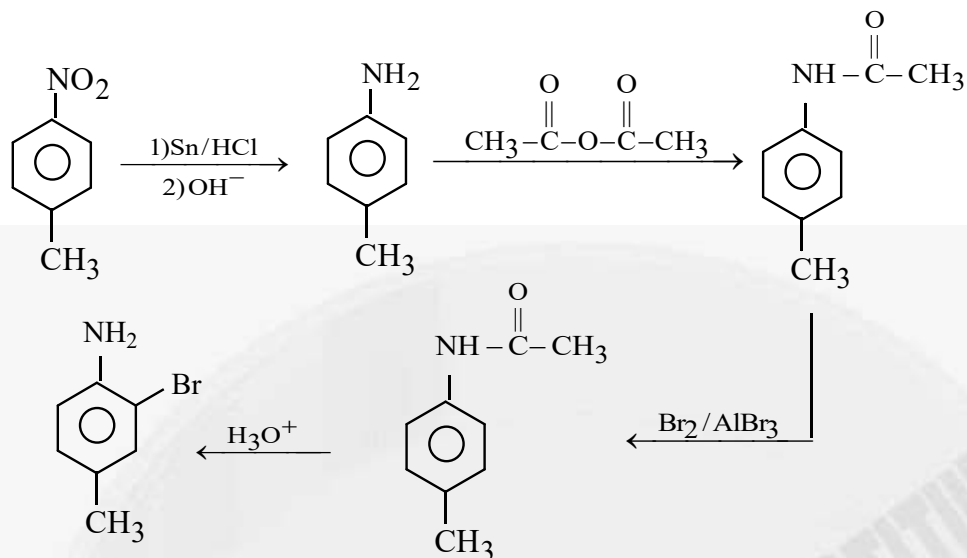


When the product (P) is subjected to Carius analysis using  $\text{AgNO}_3$ , 1.0 g of the product (P) will produce .....g of the precipitate of  $\text{AgBr}$  (Nearest integer)

(Given : molar mass in  $\text{g mol}^{-1}$  C : 12, H : 1, O : 16, N : 14, Br : 80, Ag : 108)

**Key 1**

**Sol**



$$\text{Molar mass of (P)} = (7 \times 12) + (8 \times 1) + 80 + 14 = 186$$

$$\text{Molar mass of AgBr} = 108 + 80 = 188$$

$$186 \text{ gr}_{(\text{P})} \rightarrow 188 \text{ gr (AgBr)}$$

$$1 \text{ gm} \rightarrow ? x$$

$$x = \frac{188 \times 1}{186} = 1.0107 \cong 1 \text{ gram}$$



# TOPPERS ARE NOT BORN, THEY'RE MADE @ SRI CHAITANYA

SEIZES 3 RANKS IN TOP 10 IN JEE MAIN 2025 (ALL-INDIA OPEN CATEGORY)



**1**  
ALL INDIA RANK  
OPEN CATEGORY

**Ajay Reddy Vangala**  
Appl. No. 25031025592  
Classroom Student from Grade 08-10



**1**  
ALL INDIA RANK  
OPEN CATEGORY

**Devdutta Majhi**  
Appl. No. 25031006185\*



**10**  
All India Rank  
Open Category

**Saksham Jindal**  
Appl. No. 25031023696\*

**Secured 31 ranks in Top 100 All INDIA Open Category**

 <b>12</b> RANK <b>SAURAV</b> Appl. No. 250310254844*	 <b>22</b> RANK <b>LAKSHYA SHARMA</b> Appl. No. 250310034153*	 <b>31</b> RANK <b>BANDARI RUSHMITH</b> Appl. No. 250310395238	 <b>32</b> RANK <b>BHAVESH JAYANTHI</b> Appl. No. 250310269939	 <b>33</b> RANK <b>UJJWAL KESARI</b> Appl. No. 250310008860*	 <b>36</b> RANK <b>PRADISH GANDHI S</b> Appl. No. 250310788252*
 <b>39</b> RANK <b>S SAI RISHANTH REDDY</b> Appl. No. 250310565519	 <b>41</b> RANK <b>PRASANNA KS</b> Appl. No. 250310326957	 <b>43</b> RANK <b>KOLLIBOINA MUNI SAI</b> Appl. No. 250310486636	 <b>44</b> RANK <b>GORRE NITHIN REDDY</b> Appl. No. 250310551436	 <b>53</b> RANK <b>U RAMA CHARANREDDY</b> Appl. No. 250310288782	 <b>56</b> RANK <b>ARNAV NIGAM</b> Appl. No. 250310026446
 <b>60</b> RANK <b>SAMUDRA SARKAR</b> Appl. No. 250310179442*	 <b>61</b> RANK <b>SOHAN KALIDAS CHELEKAR</b> Appl. No. 250310202114*	 <b>64</b> RANK <b>BUDUMURU VIKRAM RAJA</b> Appl. No. 250310322700	 <b>66</b> RANK <b>SHAGANTI THRISHUL</b> Appl. No. 250310500006	 <b>70</b> RANK <b>LAXIBHARGAV MENDE</b> Appl. No. 250310248080	 <b>71</b> RANK <b>D CHETAN RAO</b> Appl. No. 250310635984
 <b>73</b> RANK <b>V PRAVAS REDDY</b> Appl. No. 250310253376	 <b>75</b> RANK <b>P SAI SURYA KARTHIK</b> Appl. No. 250310407961	 <b>76</b> RANK <b>YASH KUMAR</b> Appl. No. 250310204405*	 <b>81</b> RANK <b>P PRANAYA SAI MUKESH</b> Appl. No. 250310608114	 <b>89</b> RANK <b>ADITYA SINGH</b> Appl. No. 250310151728	 <b>91</b> RANK <b>JAY AGARWAL</b> Appl. No. 250310122371*
 <b>94</b> RANK <b>V ESWAR KARTHIK</b> Appl. No. 250310236425	 <b>96</b> RANK <b>SAKSHAM GARG</b> Appl. No. 250310026726*	 <b>97</b> RANK <b>RANVEER SINGH VIRDE</b> Appl. No. 250310790734			

BELOW 100 ALL INDIA OPEN CATEGORY RANKS	<b>31</b>	BELOW 500 ALL INDIA OPEN CATEGORY RANKS	<b>95</b>	BELOW 10 ALL INDIA OPEN CATEGORY RANKS	<b>10</b>	BELOW 100 ALL INDIA OPEN CATEGORY RANKS	<b>98</b>	BELOW 1000 ALL INDIA OPEN CATEGORY RANKS	<b>579</b>	TOTAL QUALIFIED RANKS FOR JEE ADVANCED-2025	<b>22,094</b>
--	-----------	--	-----------	---	-----------	--	-----------	---	------------	---	---------------



**Sri Chaitanya**  
Educational Institutions



# LEADING BY MILES SRI CHAITANYA DOMINATES JEE ADVANCED 2025

**29 Ranks in Top 100 in All-India Open Category**



**4 Students in Top 11 in JEE-Advanced 2025, All India Open Category**

<b>16 RANK</b> DEVUTTA MAJHI HT. No. 250503116*	<b>18 RANK</b> DHARMANA GNANA RUTVIK SAI HT. No. 256055278	<b>19 RANK</b> VANGALA AJAY REDDY HT. No. 256131009	<b>23 RANK</b> AKSH GOGI HT. No. 252071075*	<b>26 RANK</b> P HEMA SAI SURYA KARTHIK HT. No. 256033006	<b>27 RANK</b> SARKARSAMUDRA HT. No. 252071105*
<b>30 RANK</b> OM PRAKASH BEHERA HT. No. 252021018*	<b>32 RANK</b> SUNKARA SAI RISHMITH REDDY HT. No. 256165327	<b>34 RANK</b> DHRUBA JYOTHI PANJA HT. No. 252048248*	<b>35 RANK</b> BHAVESH JAYANTHI HT. No. 251043980	<b>36 RANK</b> ADVAY MAYANK HT. No. 252104113*	<b>37 RANK</b> KARMANYA GUPTA HT. No. 252081477*
<b>42 RANK</b> MD ANAS HT. No. 252048210*	<b>45 RANK</b> RAMIT GOYAL HT. No. 257001113*	<b>52 RANK</b> MAULIK JAIN HT. No. 252079407*	<b>54 RANK</b> GARV HT. No. 252056188*	<b>59 RANK</b> LARISSA HT. No. 252079071*	<b>60 RANK</b> ARYAN BALABADRULA HT. No. 256132077
<b>63 RANK</b> SAMVAJYOTI BISWAS HT. No. 255958456*	<b>64 RANK</b> AARUSH ANAND HT. No. 251004776*	<b>72 RANK</b> RUSHMITH BANDARI HT. No. 256168048	<b>78 RANK</b> KORIKANA RASAGNYA HT. No. 256057046	<b>87 RANK</b> LAKSHYA SHARMA HT. No. 252070079*	<b>91 RANK</b> AVANEESH BANSAL HT. No. 251114730*
<b>95 RANK</b> KAVYA AGGARWAL HT. No. 252019121*					

BELOW 100 ALL INDIA OPEN CATEGORY RANKS → **29** | BELOW 500 ALL INDIA OPEN CATEGORY RANKS → **113** | BELOW 1000 ALL INDIA OPEN CATEGORY RANKS → **205** | BELOW 1000 ALL INDIA CATEGORY RANKS COUNT → **745** | NUMBER OF QUALIFIED RANKS → **4,212**