Sri Chaitanya IIT Academy., India.

✪ A.P ✪ T.S ✪ KARNATAKA ✪ TAMILNADU ✪ MAHARASTRA ✪ DELHI ✪ RANCHI

A right Choice for the Real Aspirant

ICON Central Office, Madhapur – Hyderabad

Sec: Sr.Super60_STERLING BT | **JEE-ADV_2024-P1** | **Date: 06-07-2025**

Time: 09.00Am to 12.00Noon | QAT-12 | **Max. Marks:180**

MATHEMATICS : TOPICS COVERED FROM 20TH MAY 2024 TO 21ST JUNE 2025 -50% + PRESENT WEEK 50% up to 30-Jun-2025 to 03-Jul-2025

PHYSICS : 50% ON SYLLABUS COVERED FROM 20-05-2024 TO 27-06-25 & 50 % ON 30-06-2025 TO 04-07-2025

CHEMISTRY : TOPICS COVERED FROM 20TH MAY 2024 TO 27TH JUNE 2025 -50% + PRESENT WEEK 50% up to 30-Jun-2025 to 03-Jul-2025

Name of the Student: _____ **H.T. NO:** | | | | | | | |

JEE-ADVANCED-2024-P1-Model

Time:3Hr's **IMPORTANT INSTRUCTIONS** **Max Marks: 180**

MATHEMATICS:

Section	Question Type	+Ve Marks	- Ve Marks	No.of Qs	Total marks
Sec – I(Q.N : 1 – 4)	Questions with Single Correct Choice %	+3	-1	4	12
Sec – II(Q.N : 5 – 7)	Questions with Multiple Correct Choice with partial mark	+4	-2	3	12
Sec – III(Q.N : 8 – 13)	Questions with **NON-NEGATIVE INTEGER** Type	+4	0	6	24
Sec – IV(Q.N : 14 – 17)	Matching Type	+3	-1	4	12
Total				**17**	**60**

PHYSICS:

Section	Question Type	+Ve Marks	- Ve Marks	No.of Qs	Total marks
Sec – I(Q.N : 18 – 21)	Questions with Single Correct Choice	+3	-1	4	12
Sec – II(Q.N : 22 – 24)	Questions with Multiple Correct Choice with partial mark	+4	-2	3	12
Sec – III(Q.N : 25 – 30)	Questions with **NON-NEGATIVE INTEGER** Type	+4	0	6	24
Sec – IV(Q.N : 31 – 34)	Matching Type	+3	-1	4	12
				17	**60**

CHEMISTRY:

Section	Question Type	+Ve Marks	- Ve Marks	No.of Qs	Total marks
Sec – I(Q.N : 35 – 38)	Questions with Single Correct Choice	+3	-1	4	12
Sec – II(Q.N : 39 – 41)	Questions with Multiple Correct Choice with partial mark	+4	-2	3	12
Sec – III(Q.N : 42 – 47)	Questions with **NON-NEGATIVE INTEGER** Type	+4	0	6	24
Sec – IV(Q.N : 48 – 51)	Matching Type	+3	-1	4	12
Total				**17**	**60**

MATHEMATICS **Max Marks: 60**

SECTION – I
(SINGLE CORRECT ANSWER TYPE)

This section contains **FOUR (04)** questions.
- Each question has **FOUR** options (A), (B), (C) and (D). **ONLY ONE** of these four options is the correct answer.
- For each question, choose the option corresponding to the correct answer.
- Answer to each question will be evaluated according to the following marking scheme:

Full Marks : +3 If **ONLY** the correct option is chosen;
Zero Marks : 0 If none of the options is chosen (i.e. the question is unanswered);
Negative Marks : −1 In all other cases

1. Fifteen coupons are numbered 1, 2, 3, -----15. In how many ways seven coupons are selected at random one at a time with replacement such that the largest number on the selected coupon is 9

A) 9^7-8^7 B) 10^7-8^7 C) 8^7-7^7 D) 9^7

2. Consider a 101 digit number $N=Pa_1a_2a_3----a_{100}$ where P is a prime digit and a_1 is any digit. The number of numbers N can be formed such that 9 is used odd number of times is K then which of the following incorrect.

A) K is even number B) K is perfect square
C) is divisible by 2^{16} D) not divisible by 2^{32}

3. If $f(n)=\underset{x\to 0}{Lim}\left(\left(1+\sin\frac{x}{2}\right)\left(1+\sin\frac{x}{2^2}\right)------\left(1+\sin\frac{x}{2^n}\right)\right)^{\frac{1}{x}}$ then $\lim\limits_{n\to\infty} f(n)=$

A) 1 B) e C) 0 D) ∞

4. Last 2 digits of 17^{256} are

A) 89 B) 81 C) 63 D) 17

SECTION – II
(ONE OR MORE CORRECT ANSWER TYPE)

This section contains **THERE (03)** questions.
- Each question has **FOUR** options (A), (B), (C) and (D). **ONE OR MORE THAN ONE** of these four option(s) is(are) correct answer(s).
- For each question, choose the option(s) corresponding to (all) the correct answer(s).
- Answer to each question will be evaluated according to the following marking scheme :

Full Marks :+4 **ONLY** if (all) the correct option(s) is(are) chosen;
Partial Marks: +3 If all the four options are correct but **ONLY** three options are chosen;
Partial Marks: +2 If three or more options are correct but **ONLY** two options are chosen, both of which are correct ;
Partial Marks: +1 If two or more options are correct but **ONLY** two options are chosen, and it is a correct option ;
Zero Marks : 0 If none of the options is chosen (i.e. the question is unanswered);
Negative Marks : –2 In all other cases.
For example, in a question, if (A), (B) and (D) are the ONLY three options corresponding to correct answers, then choosing ONLY (A), (B) and (D) will get +4 marks; choosing ONLY (A) and (B) will get +2 marks; choosing ONLY (A) and (D) will get +2 marks; choosing ONLY (B) and (D) will get +2 marks; choosing ONLY (A) will get +1 mark; choosing ONLY (B) will get +1 mark; choosing ONLY (D) will get +1 mark; choosing no option (i.e. the question is unanswered) will get 0 marks; and choosing any other combination of options will get -2 marks.

5. Sixty points of which 30 are red coloured, 20 are blue, ten are green are marked on a circle. These points divide the circle into 60 arcs. Each of these arcs is assigned a number according to the colours of its end points. An arc between a red and a green points is assigned a number 1, an arc between a red and blue point is assigned a number 2 and arc between blue and green point is assigned a number 3. The arcs between two points of the same colour is 0. If k is the greatest possible sum of all the numbers assigned to the arcs then k is

A) Perfect square B) is an even number

C) divisible by 25 D) divisible by 9

6. Which of the following is/are true? ([.] Denotes G.I.F)

A) $\int_1^3 \frac{dx}{x^2+[x]^2+1-2x[x]}=\frac{\pi}{2}$

B) *If* $\int_{\log 2}^{x} \frac{dy}{\sqrt{e^y-1}}=\frac{\pi}{6}$ then $x=\log_e^4$

C) $\int_{-n}^{n}(-1)^{[x]}\,dx=0\ (n\in N)$

D) *If* $\int_0^{100} f(x)dx=e$ *then* $\sum_{r=1}^{100}\left(\int_0^1 f(r-1+x)dx\right)=e$

7. Let $\bar{a},\bar{b}$ and $\bar{c}$ be three non-coplanar vectors and $\bar{d}$ be a non-zero vector which is perpendicular to $\bar{a}+\bar{b}+\bar{c}$ and $\bar{d}=(\bar{a}\times\bar{b})\sin x+(\bar{b}\times\bar{c})\cos y+2(\bar{c}\times\bar{a})$ then

A) $\frac{\bar{d}.(\bar{a}+\bar{c})}{[\bar{a}\,\bar{b}\,\bar{c}]}=2$ B) $\frac{\bar{d}.(\bar{a}+\bar{c})}{[\bar{a}\,\bar{b}\,\bar{c}]}=-2$

C) Minimum value of x^2+y^2 is $\frac{\pi^{-2}}{4}$ D) Minimum value of x^2+y^2 is $\frac{5\pi^{-2}}{4}$

SECTION-III
(NON-NEGATIVE INTEGER.)

This section contains **SIX (06)** questions.
- The answer to each question is a **NON-NEGATIVE INTEGER.**
- For each question, enter the correct integer corresponding to the answer using the mouse and the onscreen virtual numeric keypad in the place designated to enter the answer.
- Answer to each question will be evaluated according to the following marking scheme

Full Marks : +4 If ONLY the correct integer is entered; Zero Marks : 0 In all other cases.

8. The number of 6 – digit numbers that satisfy the conditions, the digits of each number are all from the set $\{1,2,3,4,5\}$ and any digit appears in the numbers at least twice (eg-225252 is acceptable but 222133 is not acceptable) is

9. A person has 6 friends and during a certain vacation met them during several dinners. He found that he dinned with all the 6 exactly on one day, with every 5 of them on 2 days, with every 4 of them on 3 days, with every 3 on 4 days with every 2 on 5 days. Further every friend was present at 7 dinners and every friend was absent at 7 dinners. The number of dinner(s) he had alone is equal to

10. The number of ordered pairs $(m,n); m,n \in \{1,2,3,---,20\}$ such that $3^m + 7^n$ is a multiple of 10, is equal to k, then $\frac{k}{25}$ is

11. The value of $\left(\left(\log_2^9\right)^2\right)^{\frac{1}{\log_2\left(\log_2^9\right)}} . \left(\sqrt{7}\right)^{\frac{1}{\log_4^7}}$ is

12. Let X be the set of first 2018 terms of A.P 1, 6, 11 ------, Y be the set of first 2018 terms of A.P 9, 16, 23, --- then the number of elements in the set $X \cup Y$ is

13. Let $a,b,c \in R^+$ such that the equation $\sqrt{3}a\cos x + 2b\sin x = C$, $x \in \left[\frac{-\pi}{2}, \frac{\pi}{2}\right]$ has two distinct real roots $\alpha \text{ and } \beta$, $\alpha + \beta = \frac{\pi}{3}$ then $\frac{a}{b} =$

SECTION – IV
(MATCHING TYPE)

This section contains **FOUR (04)** Matching List Sets.
- Each set has **ONE** Multiple Choice Question.
- Each set has **TWO** lists : **List-I** and **List-II.**
- **List-I** has **Four** entries (I), (II), (III) and (IV) and **List-II** has **Five** entries (P), (Q), (R), (S) and (T).
- **FOUR** options are given in each Multiple Choice Question based on **List-I** and **List-II** and **ONLY ONE** of these four options satisfies the condition asked in the Multiple Choice Question.
- Answer to each question will be evaluated according to the following marking scheme :

Full Marks:+3 **ONLY** if the option corresponding to the correct combination is chosen;
Zero Marks: 0 If none of the options is chosen (i.e. the question is unanswered);
Negative Marks: –1 In all other cases.

14. Match the following

	List-I		List-II
P)	In a class of 10 students 6 are boys and 4 are girls, in how many ways class teacher can select students for a project such that the group has at least 2 boys and 2 girls?	**1)**	80
Q)	In fruit basket 4 mangoes, 5 bananas, and 4 apples are kept, in how many ways one can select fruits from his fruit basket such that at least one fruit of each type is always selected? (Each kind of fruits are identical)	**2)**	22
R)	In a fruit basket 4 mangoes, 5 bananas, and 4 apples are kept, in how many ways one can select fruits from this fruit basket such that at least one mango, 2 bananas and 3 apples are always selected (Each kind of fruits are identical)	**3)**	627
S)	There are 6 questions in an examination, a student has to answer atleast three questions to pass the exam, in how many ways student can fail the exam?	**4)**	32
		5)	64

A) $P \to 3, Q \to 1, R \to 2, S \to 4$ B) $P \to 3, Q \to 1, R \to 4, S \to 2$

C) $P \to 3, Q \to 4, R \to 1, S \to 4$ D) $P \to 3, Q \to 1, R \to 3, S \to 4$

15. Match the following

	List-I		List-II
P)	The number of ways one or more balls can be selected out of 10 white, 9 green and 7 blue balls is (same colour are identical)	**1)**	4851
Q)	The number of factors (excluding 1 and the number it self) of $a^7b^4c^3$def where a,b,c,d,e,f are prime numbers	**2)**	879
R)	The number of natural numbers less than 10^4 in which all the digits are different	**3)**	1278
S)	The number of ordered triplets of positive integers (x,y,z) which satisfy the equation x+y+z=100 is	**4)**	5274
		5)	360

A) $P \to 2, Q \to 4, R \to 1, S \to 3$ B) $P \to 4, Q \to 3, R \to 1, S \to 2$

C) $P \to 2, Q \to 3, R \to 4, S \to 1$ D) $P \to 4, Q \to 3, R \to 2, S \to 1$

16. Match the following

	List-I		List-II
P)	If A is an idempotent matrix and I is an identity matrix of the same order then the value of 'n', such that $(A+I)^n = I+127A$ is	**1)**	16
Q)	If A is matrix such that $a_{ij} = (i+j)(i-j)$, then A is singular if order of matrix is	**2)**	3
R)	If $\lvert A\rvert = 2$ then $\lvert 2A^{-1}\rvert =$(where A is of order 3)	**3)**	4
S)	If $\lvert A\rvert = \frac{1}{4}$ then $\lvert Adj(Adj(2A))\rvert =$(where A is of order 3)	**4)**	7
		5)	9

A) $P \to 4, Q \to 2, R \to 3, S \to 1$ B) $P \to 4, Q \to 2, R \to 1, S \to 3$

C) $P \to 2, Q \to 4, R \to 1, S \to 3$ D) $P \to 2, Q \to 3, R \to 1, S \to 4$

17. Match the following

	List-I		List-II
P)	The coordinates of the point on the parabola $y^2 = 8x$ which is at minimum distance from the circle $x^2 + (y+6)^2 = 1$ are (a, b)	**1)**	a-b=0
Q)	If the line y=3x+c touches the parabola $y^2 = 12x$ at point P, then the equation of the tangent at point Q where PQ is a focal chord is $ax + by = 27$ then	**2)**	a-b=6
R)	A pair of tangents are drawn from the point (-1, 1) to the ellipse $x^2 - 4x + 4y^2 = 0$. If θ is angle between then such that $\tan\theta = \frac{a}{b}$ where $a, b \in N$ are co-prime	**3)**	a-b=2
S)	A tangent to the ellipse $\frac{x^2}{25} + \frac{y^2}{16} = 1$ at any point P meets the line x=0 at a point Q. Let R be the image of Q w.r.t. y=x then the circle whose extremities of a diameter are Q and R are passes through a fixed point (a, b) then	**4)**	a-b=1
		5)	a-b=5

A) $P \to 2, Q \to 3, R \to 1, S \to 4$ B) $P \to 2, Q \to 3, R \to 2, S \to 4$

C) $P \to 3, Q \to 2, R \to 4, S \to 1$ D) $P \to 2, Q \to 3, R \to 4, S \to 1$

PHYSICS **Max Marks: 60**

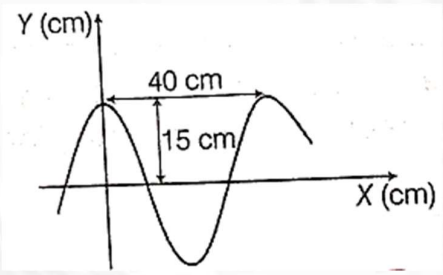
SECTION – I
(SINGLE CORRECT ANSWER TYPE)

This section contains **FOUR (04)** questions.

- Each question has **FOUR** options (A), (B), (C) and (D). **ONLY ONE** of these four options is the correct answer.
- For each question, choose the option corresponding to the correct answer.
- Answer to each question will be evaluated according to the following marking scheme:

Full Marks : +3 If **ONLY** the correct option is chosen;
Zero Marks : 0 If none of the options is chosen (i.e. the question is unanswered);
Negative Marks : −1 In all other cases

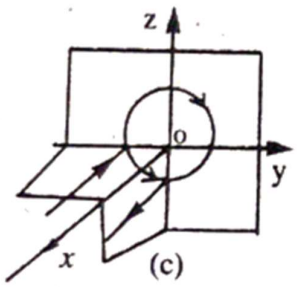
18. A sinusoidal wave travelling in the positive direction has an amplitude of 15cm wavelength 40cm and frequency 8Hz. The vertical displacement of the medium at t =0 s and x=0 is also 15cm (see figure). What are the phase constant δ and general expression for wave function?



A) $\frac{\pi}{2}, 15\cos\left(16\pi t - \frac{\pi}{20}x + \frac{\pi}{2}\right)$ B) $0, 15\cos\left(16\pi t - \frac{\pi}{20}x\right)$

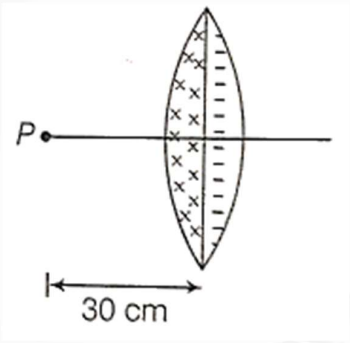
C) $\frac{\pi}{2}, 15\sin\left(16\pi t - \frac{\pi}{20}x + \frac{\pi}{2}\right)$ D) $\frac{\pi}{4}, 15\sin\left(16\pi t - \frac{\pi}{20}x + \frac{\pi}{2}\right)$

19. Find the magnetic induction at the point O if wire carrying a current I has the shape shown in fig. (R is the radius of the curved part)



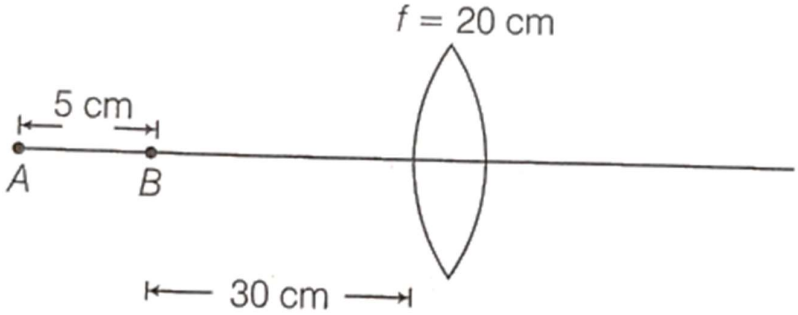
A) $\frac{\mu_0}{4\pi}\frac{i}{R}\sqrt{\pi^2+4}$ B) $\frac{\mu_0}{4\pi}\frac{i}{R}\sqrt{1+(\pi+1)^2}$ C) $\frac{\mu_0}{4\pi}\frac{\sqrt{2}i}{R}$ D) $\frac{\mu_0}{4\pi}\frac{i}{R}$

20. An equiconvex lens is formed by combination of two plano convex lenses of refractive indices 1.5 and 2. The radius of curvature of curved surface is 20cm. A point object is placed at 30 cm from the lens. The image of the point object is



A) 24 cm right from the lens B) 24cm left from the lens
C) 12cm right of the lens 4) None of the above

21. AB is linear object placed along optical axis as shown in the figure.



A) The size of image is smaller than 5cm
B) The size of image is larger than size of object
C) The size of image is equal to the size of object.
D) If a transparent rectangular slap of thickness 12cm and refractive index $\frac{4}{3}$ is placed between object and lens the size of image may increase

SECTION – II
(ONE OR MORE CORRECT ANSWER TYPE)

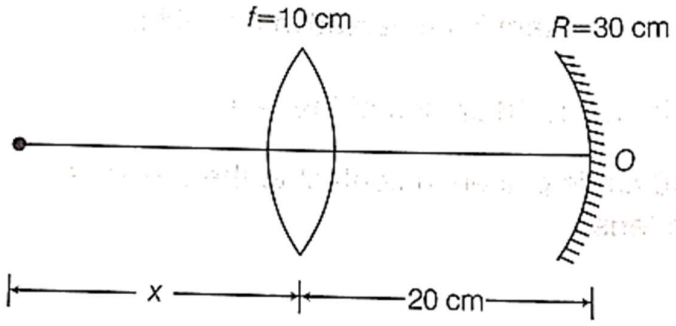
This section contains **THERE (03)** questions.

- Each question has **FOUR** options (A), (B), (C) and (D). **ONE OR MORE THAN ONE** of these four option(s) is(are) correct answer(s).
- For each question, choose the option(s) corresponding to (all) the correct answer(s).
- Answer to each question will be evaluated according to the following marking scheme :

Full Marks :+4 **ONLY** if (all) the correct option(s) is(are) chosen;
Partial Marks: +3 If all the four options are correct but **ONLY** three options are chosen;
Partial Marks: +2 If three or more options are correct but **ONLY** two options are chosen, both of which are correct ;
Partial Marks: +1 If two or more options are correct but **ONLY** two options are chosen, and it is a correct option ;
Zero Marks : 0 If none of the options is chosen (i.e. the question is unanswered);
Negative Marks : –2 In all other cases.

For example, in a question, if (A), (B) and (D) are the ONLY three options corresponding to correct answers, then choosing ONLY (A), (B) and (D) will get +4 marks; choosing ONLY (A) and (B) will get +2 marks; choosing ONLY (A) and (D) will get +2 marks; choosing ONLY (B) and (D) will get +2 marks; choosing ONLY (A) will get +1 mark; choosing ONLY (B) will get +1 mark; choosing ONLY (D) will get +1 mark; choosing no option (i.e. the question is unanswered) will get 0 marks; and choosing any other combination of options will get -2 marks.

22. A point P is placed on the common optical axis of lens and mirror as shown in the figure. The possible value of x for which image coincides with objects is



A) 5cm B) 10 cm C) 15 cm D) 20 cm

23. To obtain a real image the object and screen should be at a minimum separation D of four times the focal length (f). The distance of the lens is moved to get real image and the screen object distance can be used to find the focal length of the lens. As the lens is moved will diminish. However the magnification product will be one.

If d is the separation between the positions of the lens of focal length f for real image, and D is the separation between object and screen, then answer the following questions.

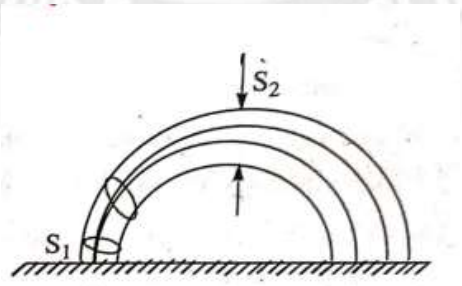
A) The focal length of lens is $f = \frac{D^2-d^2}{4D}$

B) The ratio of magnification in two positions is $\left(\frac{D+d}{D-d}\right)^2$

C) The difference between the Magnification of two different positions is $\frac{4Dd}{D^2-d^2}$

D) The two positions of lens are such that $u_1 = v_2$ and $u_2 = v_1$

24. Water jet is projected at an angle to the horizontal. At the point of projection, the area of the jet is S_1 and at the highest point, the area of the jet is S_2. The initial velocity of projection is u.



A) The angle of projection is $\cos^{-1}\left(\frac{S_1}{S_2}\right)$

B) The range on the level ground is $\frac{2u^2}{g}\frac{S_1}{S_2}\sqrt{1-\frac{S_1^2}{S_2^2}}$

C) The maximum height reached from the ground is $\frac{u^2}{2g}\left(1-\frac{S_1^2}{S_2^2}\right)$

D) The rate of volume flow is S_2u

SECTION-III
(NON-NEGATIVE INTEGER.)

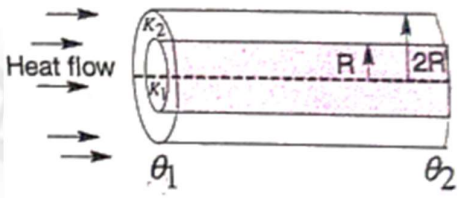
This section contains **SIX (06)** questions.

- The answer to each question is a **NON-NEGATIVE INTEGER.**
- For each question, enter the correct integer corresponding to the answer using the mouse and the onscreen virtual numeric keypad in the place designated to enter the answer.
- Answer to each question will be evaluated according to the following marking scheme

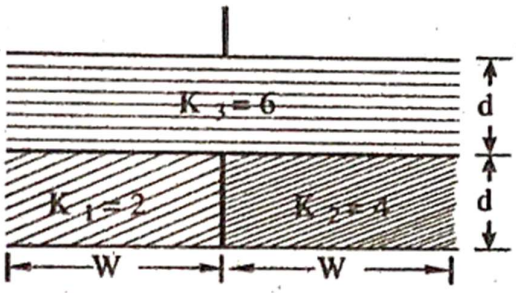
Full Marks : +4 If ONLY the correct integer is entered; Zero Marks : 0 In all other cases..

25. A clock face has negative charges -q,-2q,-3q……..,-12q fixed at the position of the corresponding numbers on the dial. The clock hands do not disturb the net field due to point charges. Time at which the hour hand point in the same direction is electric field at the centre of the dial is X hours and 30 minutes, find X

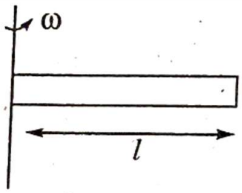
26. A cylinder of radius R made of a material of thermal conductivity K_1 is surrounded by cylindrical shell of inner radius R and outer radius 2R made of a material of thermal conductivity K_2. The two ends of the combined system are maintained at two different temperature. There is no loss of heat across the cylindrical surface and system is in steady state. The effective thermal conductivity of the system is $\frac{K_1+xK_2}{y}$ then x+y =



27. A parallel plate capacitor C (Without dielectric) is filled by dielectric slabs as shown in figure. Then the new capacitance of the capacitor is $\frac{XC}{10}$ then X =_____



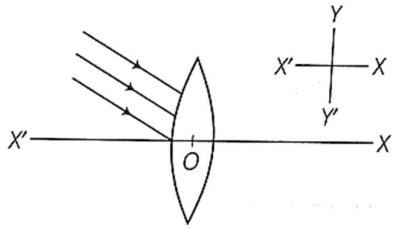
28. A thin uniformly, copper rod of length 'l' and mass m rotates uniformly. With and angular velocity 'ω' about a vertical axis passing though one of its ends as shown in figure.



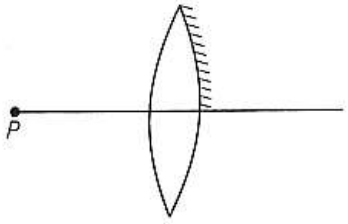
'Y' is young's modules of copper, Breaking stress is 'σ'Density of copper is 'ρ'

Tension in the rod as a function of 'x' from the rigid end is $\frac{m\omega^2 l}{a}\left[1-\frac{x^b}{l^c}\right]$ then a+b+c=

29. A parallel beam of light is incident on a thin convex lens of focal length 20 cm the beam makes an angle 2^0 with the optical axis the y- coordinate of converging point after refraction is $\left(\frac{2\pi}{n}\right)$cm. find the value of n



30. In figure shown, half above portion of rear surface of the equiconvex lens of refractive index 1.5 is silvered The radius of each surface is 40cm. A point object P is placed at 30 cm from the lens. The distance in cm between images formed by silvered part and unsilvered part is $\frac{420}{n}$. Find the value of n



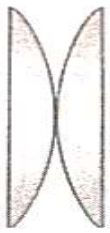
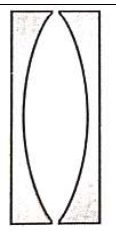
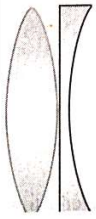
SECTION – IV
(MATCHING TYPE)

This section contains **FOUR (04)** Matching List Sets.
- Each set has **ONE** Multiple Choice Question.
- Each set has **TWO** lists : **List-I** and **List-II.**
- **List-I** has **Four** entries (I), (II), (III) and (IV) and **List-II** has **Five** entries (P), (Q), (R), (S) and (T).
- **FOUR** options are given in each Multiple Choice Question based on **List-I** and **List-II** and **ONLY ONE** of these four options satisfies the condition asked in the Multiple Choice Question.
- Answer to each question will be evaluated according to the following marking scheme :

Full Marks:+3 **ONLY** if the option corresponding to the correct combination is chosen;
Zero Marks: 0 If none of the options is chosen (i.e. the question is unanswered);
Negative Marks: –1 In all other cases.

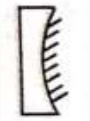
31. Four combinations of two thin lenses are given in List 1. The radius of curvature of all curved surfaces is r and the refractive index of all the lenses is 1.5. Match lens combinations in List 1 with their focal length in List II and select the correct answer using the code given below the list.

Match List-I with List-II

	List-I		List-II
p)		1)	$2r$
Q)		2)	$r/2$
R)		3)	$-r$
S)		4)	r

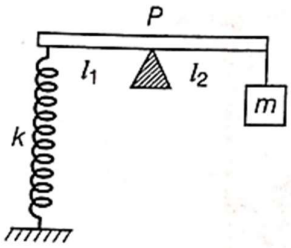
A) P-1, Q-2,R-3,S-4 B) P-2, Q-4, R-3, S-1
C) P-4, Q-1, R-2, S-3 D) P-2, Q-1,R-3,S-4

32. Thin lenses made of materials $\mu = 1.5$ with which are silvered at surface are given in column-I and their focal powers are given is column-II Radius of curvature of each spherical surface is R. Match the two columns

	List-I		List-II
A)		p)	$-\frac{3}{R}$
B)		q)	$\frac{1}{R}$
C)		r)	$\frac{4}{R}$
D)		s)	$\frac{2}{R}$

A) A-r,B-p,C-q,D-s B) A-r,B-s,C-p,D-q
C) A-r,B-p,C-s,D-q D) A-q,B-p,C-s,D-r

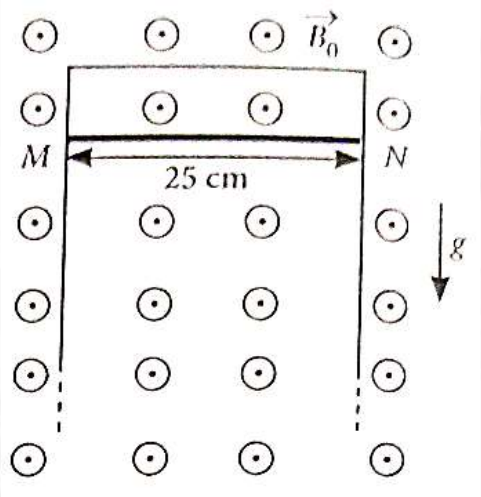
33. A small block of mass m is connected one end of a massless rod A spring of force constant k is attached to the other end of the rod. The rod is pivoted at P angular Displacement θ of the block. Match the column I with column II and mark the correct option from the codes given below



	Column-I		Column-II
A)	Restoring torque	p)	$\frac{1}{2}kl_1^2\theta^2$
B)	Angular acceleration	q)	$kl_1^2\theta$
C)	Energy of oscillations	r)	$kl_1^2\theta / ml_2^2$
D)	Time period of oscillations	s)	$2\pi\sqrt{\frac{l_2^2 m}{l_1^2 k}}$

A) A-q,B-r,C-p,D-s B) A-p,B-q,C-r,D-s
C) A-s,B-p,C-r,D-q D) A-r,B-s,C-q,D-p

34. A thin conducting rod MN of mass 20 gm, length 25cm and resistance 10 Ω is held on frication less, long, perfectly conducting vertical rails as shown in the figure. There is a uniform magnetic field $B_0 = 4T$ directed perpendicular to the plane of the rod-rail arrangement. The rod is released from rest at time $t = 0$ and it moves down along the rails. Assume air drag is negligible. Mach each quantity in List –I with an appropriate value from List –II, and choose the correct option (Given: The acceleration due to gravity, $g = 10\,m\,s^{-2}$ and $e^{-1} = 0.4$)



	List-I		List-II
P)	At $t = 0.2\,s$, the magnitude of the induced emf in Volt	1)	0.07
Q)	At $t = 0.2\,s$, the magnitude of the magnetic force in Newton	2)	0.14
R)	At $t = 0.2\,s$, the power dissipated as heat in Watt	3)	1.20
S)	The magnitude of terminal velocity of the rod in m s^{-1}	4)	0.12
		5)	2.00

A) $P \to 5; Q \to 2; R \to 3; S \to 1$ B) $P \to 3; Q \to 1; R \to 4; S \to 5$

C) $P \to 4; Q \to 3; R \to 1; S \to 2$ D) $P \to 3; Q \to 4; R \to 2; S \to 5$

CHEMISTRY **Max Marks: 60**

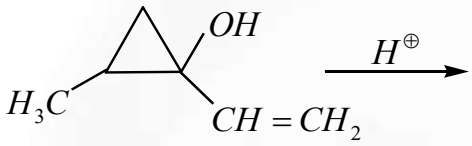
SECTION – II
(SINGLE CORRECT ANSWER TYPE)

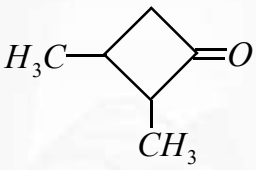
This section contains **FOUR (04)** questions.

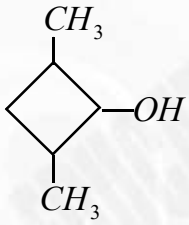
- Each question has **FOUR** options (A), (B), (C) and (D). **ONLY ONE** of these four options is the correct answer.
- For each question, choose the option corresponding to the correct answer.
- Answer to each question will be evaluated according to the following marking scheme:

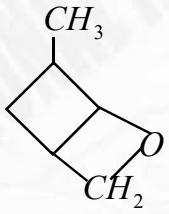
Full Marks : +3 If **ONLY** the correct option is chosen;
Zero Marks : 0 If none of the options is chosen (i.e. the question is unanswered);
Negative Marks : −1 In all other cases

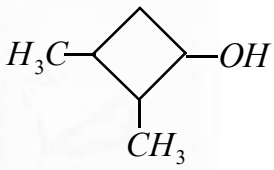
35. The major product of the following reaction is

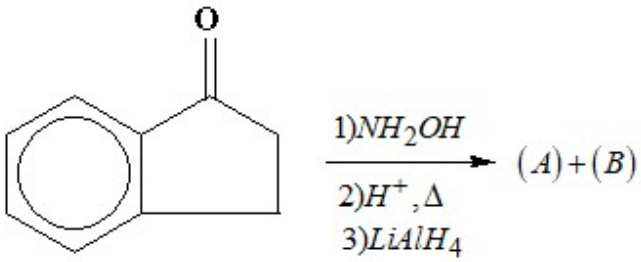


A) 

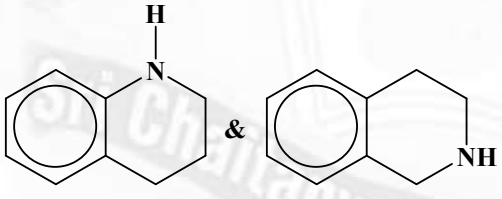
B) 

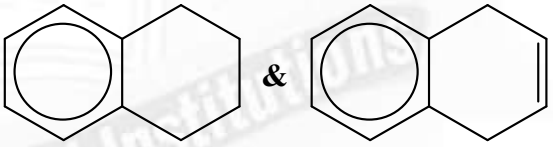
C) 

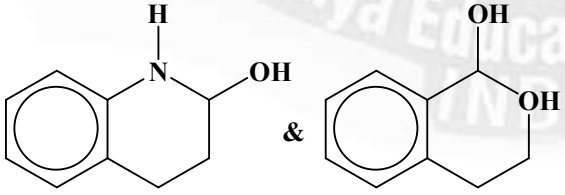
D) 

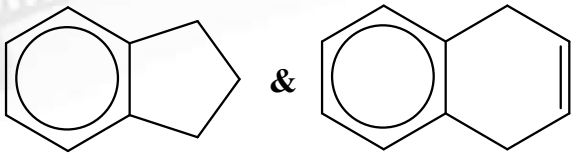
36. 

Product A & B are

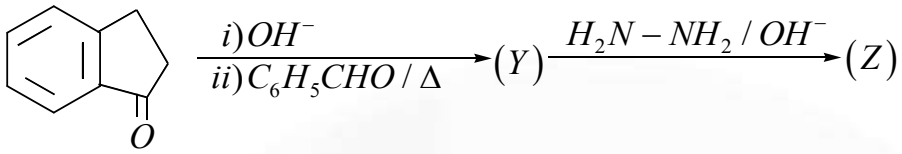
A) 

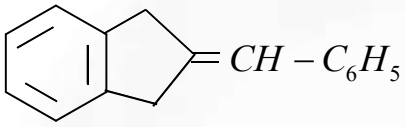
B) 

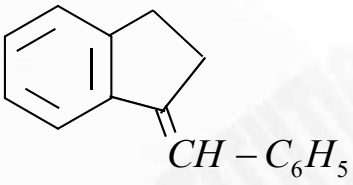
C) 

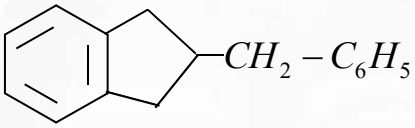
D) 

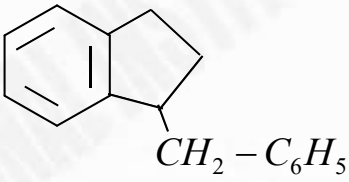
37. In the given reaction sequence compound (z) is



A) 

B) 

C) 

D) 

38. Which of the following statements is incorrect?

A) The anion of Mg_2C_3 is isoelectronic with CO_2, N_3^-, OCN^-

B) In both $\left[Ni(CN)_4\right]^{2-}$ and $\left[Ni(CO)_4\right]$ nickel atom/ion is in different hybridized states

C) In permanganate ion, π - bonds are all formed by $p\pi - p\pi$ overlapping

D) $\left[Co(H_2O)_3(F)_3\right]$ exhibit fac and mer type of geometrical isomerism

SECTION – II
(ONE OR MORE CORRECT ANSWER TYPE)

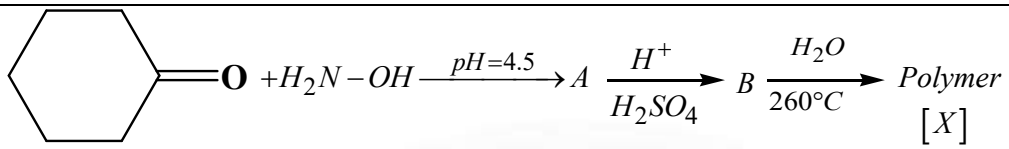
This section contains **THERE (03)** questions.

- Each question has **FOUR** options (A), (B), (C) and (D). **ONE OR MORE THAN ONE** of these four option(s) is(are) correct answer(s).
- For each question, choose the option(s) corresponding to (all) the correct answer(s).
- Answer to each question will be evaluated according to the following marking scheme :

Full Marks :+4 **ONLY** if (all) the correct option(s) is(are) chosen;
Partial Marks: +3 If all the four options are correct but **ONLY** three options are chosen;
Partial Marks: +2 If three or more options are correct but **ONLY** two options are chosen, both of which are correct ;
Partial Marks: +1 If two or more options are correct but **ONLY** two options are chosen, and it is a correct option ;
Zero Marks : 0 If none of the options is chosen (i.e. the question is unanswered);
Negative Marks : –2 In all other cases.
For example, in a question, if (A), (B) and (D) are the ONLY three options corresponding to correct answers, then choosing ONLY (A), (B) and (D) will get +4 marks; choosing ONLY (A) and (B) will get +2 marks; choosing ONLY (A) and (D) will get +2 marks; choosing ONLY (B) and (D) will get +2 marks; choosing ONLY (A) will get +1 mark; choosing ONLY (B) will get +1 mark; choosing ONLY (D) will get +1 mark; choosing no option (i.e. the question is unanswered) will get 0 marks; and choosing any other combination of options will get -2 marks.

39. In which of the following compounds having general formula of X_2Y_6 there is no- x-x bond

A) B_2H_6 B) C_2H_6 C) I_2Cl_6 D) Al_2Cl_6

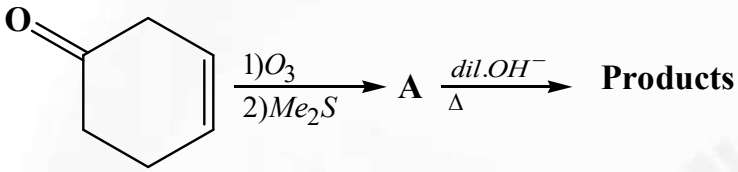
40. 

Correct statement about [X] are

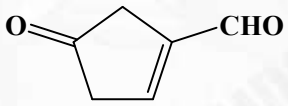
A) The polymer is Bekalite B) The polymer is Nylon=6

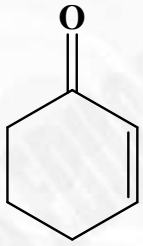
C) The polymer contains six carbons atom in its repeating units

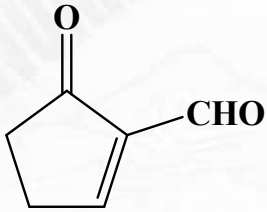
D) It is condensation polymer

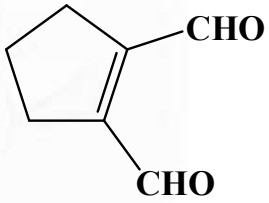
41. 

In the above sequence the final products of the reaction is / are

A) 

B) 

C) 

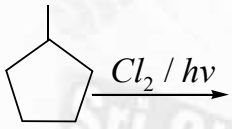
D) 

SECTION-III
(NON-NEGATIVE INTEGER.)

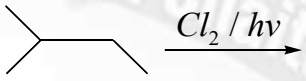
This section contains **SIX (06)** questions.

- The answer to each question is a **NON-NEGATIVE INTEGER.**
- For each question, enter the correct integer corresponding to the answer using the mouse and the onscreen virtual numeric keypad in the place designated to enter the answer.
- Answer to each question will be evaluated according to the following marking scheme

Full Marks : +4 If ONLY the correct integer is entered; Zero Marks : 0 In all other cases.

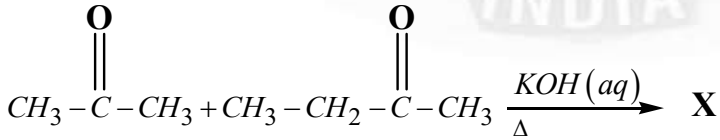
42. 

Total number of monochlorinated product $= x\left(\text{Excludingstereoisomers}\right)$



Total number of monochlorinated product= y

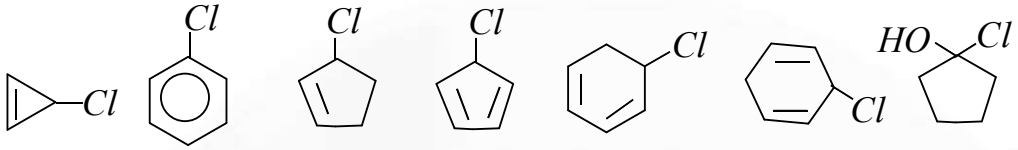
(Excluding stereoisomers). Identify value of x+y.

43. 

X = No. of aldol condensation products including stereoisomer. Find the value of 'X'

44. Give the atomic number of the inert gas atom in which the total number of d electrons is equal to the difference in the number of total p-and s-electrons

45. How many of the following halides gives white precipitate with aqueous Ag NO_3 Solution



$H_2C=CH-Cl$ $CH_2=CH-CH_2-Cl$ $ph-CH_2-Cl$

46. How many of the following compounds are more reactive than Benzaldehyde,
$HCHO,\ CCl_3CHO,\ P-CH_3-C_6H_4-CHO,\ P-NO_2-C_6H_4-CHO,\ C_6H_5COC_6H_5$

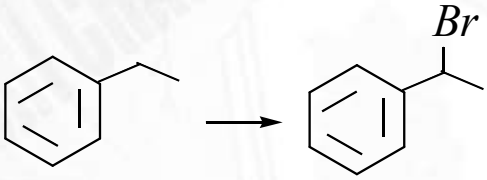
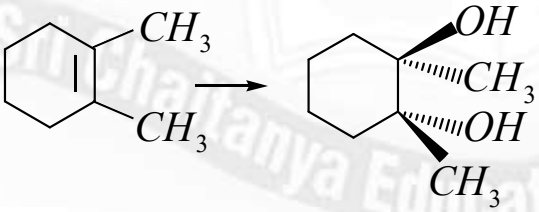
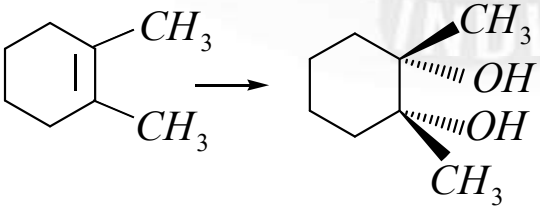
47. Determine the total number of compounds that contain at least one bridging oxo group among the following molecules $N_2O_4, N_2O_5, P_4O_6, P_4O_9, H_4P_2O_6, H_5P_3O_{10}, H_2S_2O_3, H_2S_3O_6$

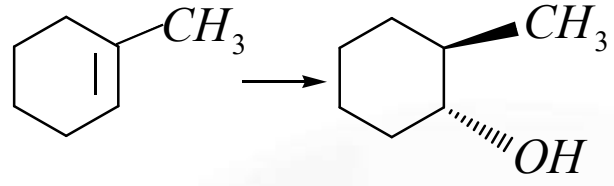
SECTION – IV
(MATCHING TYPE)

This section contains **FOUR (04)** Matching List Sets.
- Each set has **ONE** Multiple Choice Question.
- Each set has **TWO** lists : **List-I** and **List-II.**
- **List-I** has **Four** entries (I), (II), (III) and (IV) and **List-II** has **Five** entries (P), (Q), (R), (S) and (T).
- **FOUR** options are given in each Multiple Choice Question based on **List-I** and **List-II** and **ONLY ONE** of these four options satisfies the condition asked in the Multiple Choice Question.
- Answer to each question will be evaluated according to the following marking scheme :

Full Marks:+3 **ONLY** if the option corresponding to the correct combination is chosen;
Zero Marks: 0 If none of the options is chosen (i.e. the question is unanswered);
Negative Marks: –1 In all other cases..

48. Match Column-I with group reagent in Column-II

	Column-I		Column-II
P)		**1)**	$(i)BH_3\ (ii)H_2O_2/NaOH$
Q)		**2)**	NBS/hv
R)		**3)**	$(i)mCPBA$ $(ii)NaOH$ $(iii)H^+$

S)		**4)**	Bayer's reagent

(A) $P \to 2; Q \to 3; R \to 1; S \to 4$ (B) $P \to 3; Q \to 2; R \to 1; S \to 4$

(C) $P \to 2; Q \to 3; R \to 4; S \to 1$ (D) $P \to 3; Q \to 2; R \to 4; S \to 1$

49. Match the molecules with the type its overlapping in their bridge bonds

	Column-I		**Column-II**
P)	Be_2H_4	**1)**	$sp^3 - s - sp^3$
Q)	B_2H_6	**2)**	$sp^2 - s - sp^2$
R)	$Al_2(CH_3)_6$	**3)**	$sp^2 - sp^3 - sp^2$
S)	$Be_2(CH_3)_4$	**4)**	$sp^3 - sp^3 - sp^3$
		5)	$sp^3 - sp^2 - sp^3$

A) $P \to 2; Q \to 5; R \to 3; S \to 4$ B) $P \to 2; Q \to 1; R \to 4; S \to 3$

C) $P \to 1; Q \to 2; R \to 4; S \to 3$ D) $P \to 1; Q \to 2; R \to 3; S \to 5$

50.

	Column-I		**Column-II**
A)	Adiabatic expansion of an ideal gas against 1atm	**P)**	$\Delta S_{sys} > 0$
B)	Condensation of vapour at normal boiling point equilibrium	**Q)**	$\Delta U = 0$
C)	Adiabatic reversible compression involving an ideal gas	**R)**	$\Delta S_{univ} = 0$
D)	Isothermal reversible expansion of an ideal gas	**S)**	$W = 0$
		T)	$q = 0$

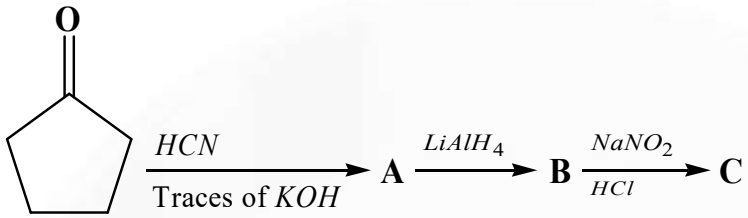
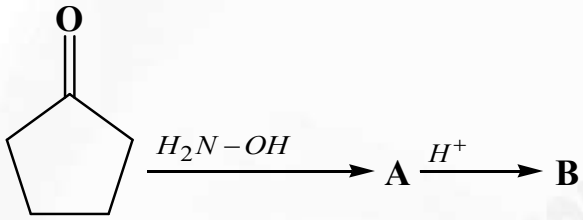
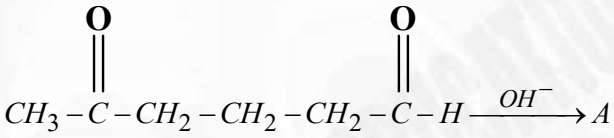
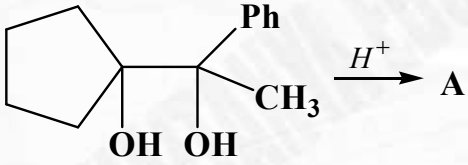
A) $A \to P,T; B \to S; C \to R,T; D \to P,Q,R$

B) $A \to P,T; B \to R; C \to R,T; D \to P,Q,R$

C) $A \to R,T; B \to S; C \to P,T; D \to P,Q,R$

D) $A \to R,T; B \to R; C \to P,T; D \to P,Q,R$

51. Match the column

Column-I		Column-II In the given sequence	
a)		p)	Formation of six member ring takes place
b)		q)	Final product is ketone
c)		r)	Final product formed will give positive Tollen's test
d)		s)	Final product formed which is react with 2,4-DNP

A) $a \to p,q,s;\ b \to p;\ c \to p,q,s;\ d \to p,q,s$

B) $a \to p,q,r,s;\ b \to p,q;\ c \to p,q;\ d \to p,s$

C) $a \to p;\ b \to p;\ c \to q;\ d \to s$

D) $a \to p,q,s;\ b \to p,q,s;\ c \to p,r,s;\ d \to p,q,s$

Sri Chaitanya Educational Institutions | Infinity Learn

Sri Chaitanya Techno School
The right mentor for IIT (JEE), NEET, Olympiad & all Other Competitive exams

40 Years of Excellence 1986-2025

JEE MAIN 2025

31 STUDENTS BELOW 100 AIR

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

DEVDUTTA MAJHI
APP. NO. 250310016185
DLP/AITS STUDENT

TOSHNIWAL SHIVEN
APP. NO. 250310391420
DLP/AITS STUDENT

SAKSHAM JINDAL
APP. NO. 250310236696
DLP/AITS STUDENT

BELOW 100 ALL INDIA OPEN CATEGORY RANKS: 31	BELOW 500 ALL INDIA OPEN CATEGORY RANKS: 95	BELOW 10 ALL INDIA CATEGORY RANKS COUNT: 10	BELOW 100 ALL INDIA CATEGORY RANKS COUNT: 98	BELOW 1000 ALL INDIA CATEGORY RANKS COUNT: 579

TOTAL QUALIFIED RANKS FOR JEE ADVANCED-2025 22,094

*DLP/AITS

JEE 2025 STARS SHINE BRIGHT

Sri Chaitanya Tops JEE ADVANCED

ALL INDIA OPEN CATEGORY RANKS

RUTVIK SAI
H.T.No. 256055278 (OBC-NCL)

MAJID MUJAHID HUSAIN
H.T.No. 251134112*

UJJWAL KESARI
H.T.No. 252016104*

AKSHAT KUMAR CHAURASIA
H.T.No. 254065055*

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

*DLP/AITS