

JEE(ADVANCED)-2026 (EXAMINATION)

(Held On Sunday 17th MAY, 2026)

CHEMISTRY

TEST PAPER WITH ANSWER AND SOLUTION

PAPER-1

SECTION-1 (Maximum Marks : 12)

- 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. An ideal gas (0.5 mol), initially at 2 bar pressure, is compressed at a constant temperature of 600 K in two steps : first against a constant external pressure of P bar ($2 < P < 8$), and then against constant external pressure of 8 bar. At each step, the compression is stopped only when the pressure of the gas becomes equal to the external pressure. The total work done on the gas in these steps is W. Considering all possible values of P ($2 < P < 8$) and taking the gas constant as R (in $\text{J K}^{-1} \text{mol}^{-1}$), the minimum value of |W| (in J) is
 (A) 207 R (B) 600 R (C) 630 R (D) 900 R

Ans. (B)

Sol. $n = 0.5$



$$W = W_1 + W_2$$

$$= -0.5 R 600 \left[1 - \frac{P}{2} \right] - 0.5 R 600 \left[1 - \frac{8}{P} \right]$$

$$W = -300 R \left[2 - \frac{P}{2} - \frac{8}{P} \right]$$

$$\Rightarrow \frac{dW}{dP} = -300R \left[-\frac{1}{2} + \frac{8}{P^2} \right] = 0$$

$$\Rightarrow \frac{1}{2} = \frac{8}{P^2} \Rightarrow P = 4 \text{ bar}$$

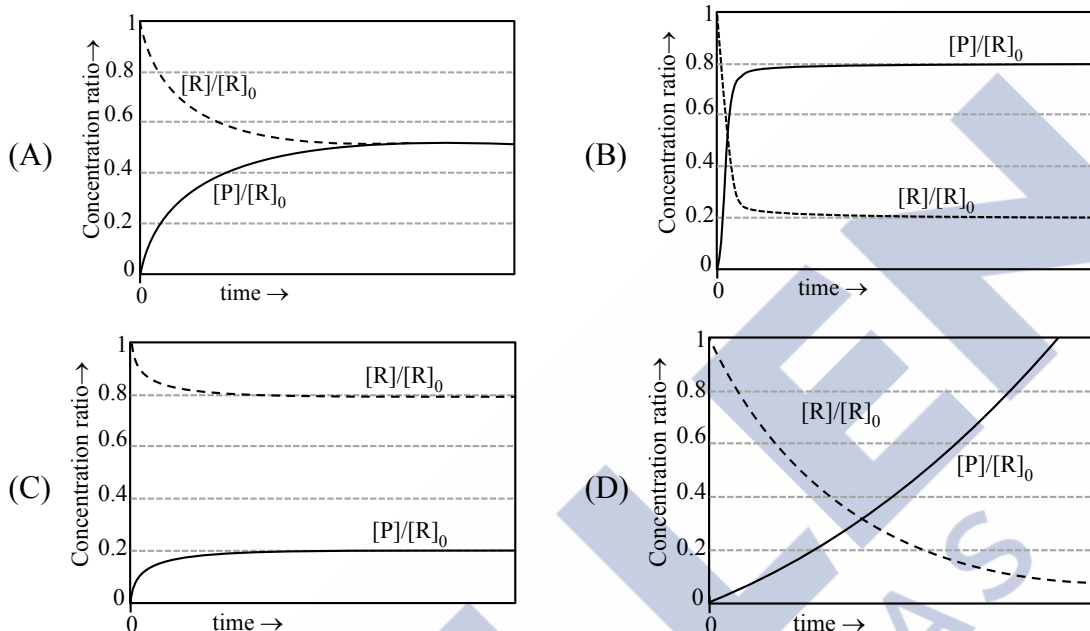
$$W = -300R \left[2 - \frac{4}{2} - \frac{8}{4} \right]$$

$$= -300R [2 - 2 - 2]$$

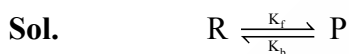
$$= 600R = W_{\text{min}}$$

Ans = B

2. For a reversible reaction $R \rightleftharpoons P$, at constant temperature, both the forward and the backward reactions are first order elementary reaction with rate constant k_f and k_b , respectively. At time zero, the concentration of R is $[R]_0$ and the concentration of P is zero. At any given time $[R]$ and $[P]$ are the concentration of R and P , respectively. If $k_b = 4k_f$, the correct graphical representation of the reaction is



Ans. (C)



$t = 0 \quad R_0 \quad 0$

$$K_c = \frac{k_f}{k_b} = \frac{1}{4} = \frac{[P]_{eq}}{[R]_{eq}}$$

$$\Rightarrow [R]_{eq} = 4[P]_{eq}$$

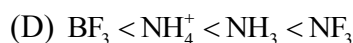
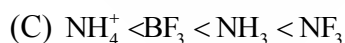
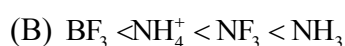
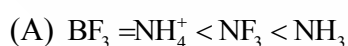
Given condition satisfied in option (C)

$$\Rightarrow \frac{[P]_{eq}}{R_0} = 0.2$$

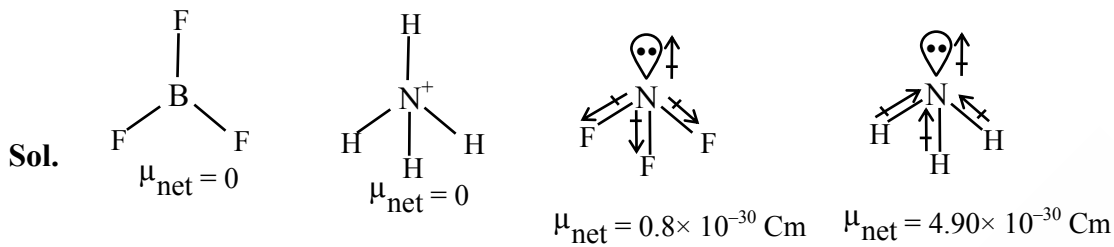
$$\Rightarrow \frac{[R]_{eq}}{R_0} = 0.8$$

Ans (C)

3. The correct order of dipole moments for the given species is

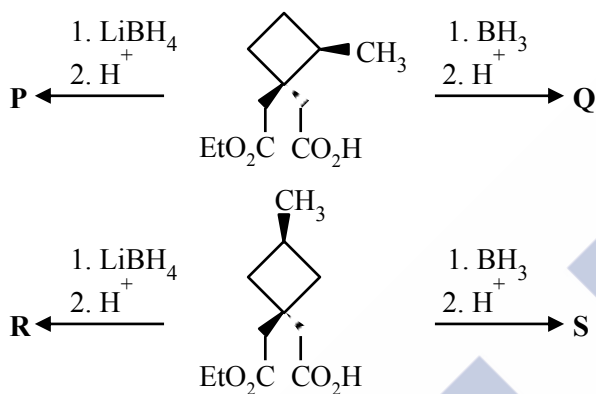


Ans. (A)



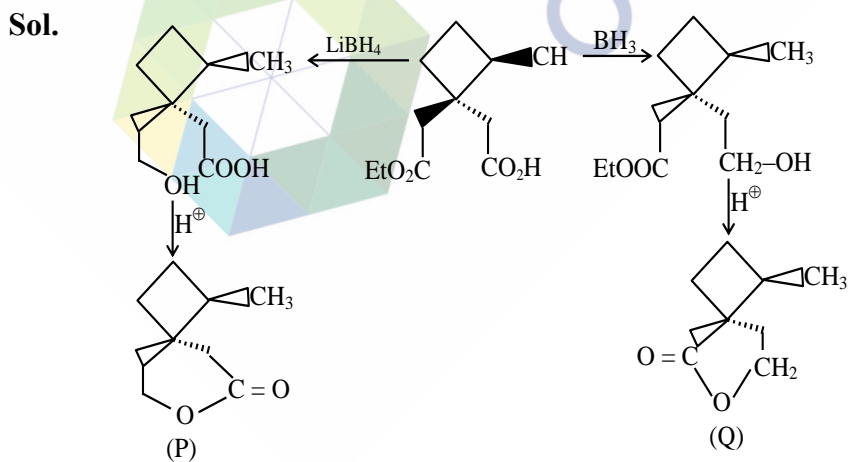
μ_{net} order $\text{BF}_3 = \text{NH}_4^+ < \text{NF}_3 < \text{NH}_3$

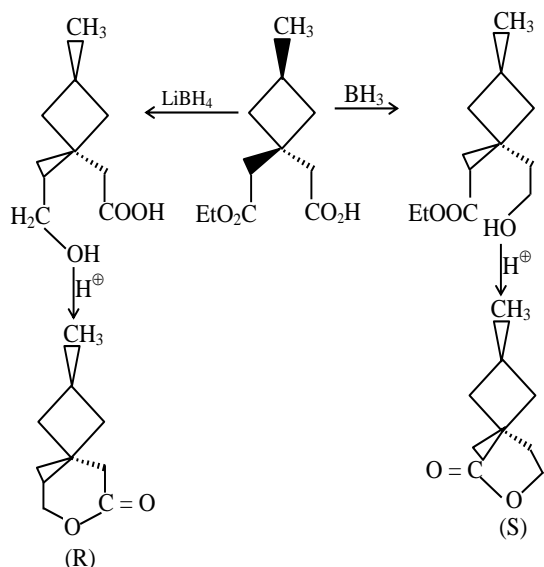
4. Considering LiBH_4 reduces an ester group to the corresponding alcohol and does not reduce a carboxylic acid group, the correct statement about the major products **P**, **Q**, **R** and **S** is



- (A) **P** & **Q** are identical, and **R** & **S** are diastereomers.
 (B) **P** & **Q** are diastereomers, and **R** & **S** are identical.
 (C) **P** & **Q** are diastereomers, and **R** & **S** are diastereomers.
 (D) **P** & **Q** are identical, and **R** & **S** are identical.

Ans. (C)





SECTION-2 : (Maximum Marks : 16)

- This section contains **FOUR (04)** 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** one option is 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* : -1 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 marks;
 - choosing **ONLY** (B) will get +1 marks;
 - choosing **ONLY** (D) will get +1 marks;
 - choosing no option (i.e. the question is unanswered) will get 0 marks; and
 - choosing any other combination of options will get -1 marks.

5. The 2s and the 2p orbital energies of hydrogen atom are $E_{2s}(\text{H})$ and $E_{2p}(\text{H})$, respectively. The 2s and the 2p orbital energies of lithium atom are $E_{2s}(\text{Li})$ and $E_{2p}(\text{Li})$, respectively. The correct option (s) about the orbital energies is (are)
- (A) $E_{2s}(\text{Li}) < E_{2p}(\text{Li})$ (B) $E_{2s}(\text{H}) = E_{2p}(\text{H})$ (C) $E_{2p}(\text{H}) < E_{2s}(\text{Li})$ (D) $E_{2s}(\text{H}) > E_{2s}(\text{Li})$

Ans. (A,B,D)

Sol. (i) The energy of subshells in multi electron system is compared on the basis of $(n + l)$ rule.

$$(n + l) \text{ value for } E_{2s} (\text{Li}) = 2$$

$$(n + l) \text{ value for } E_{2p} (\text{Li}) = 3$$

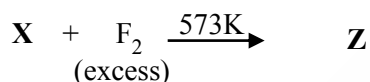
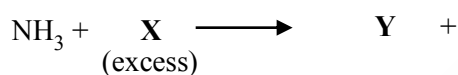
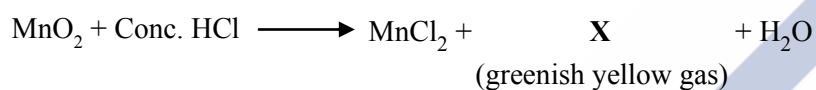
$$E_{2s} (\text{Li}) < E_{2p} (\text{Li})$$

(ii) In single electron system energy of subshell depends on the value of n

$$E_{2s} (\text{H}) = E_{2p} (\text{H}) \text{ as } n \text{ is same.}$$

(iii) For Li, $Z = 3$ more effective nuclear charge pulling its 2s electron more closer and resulting more negative lower energy.

6. Correct statement(s) about the compounds **X**, **Y** and **Z** is (are)



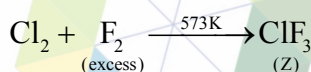
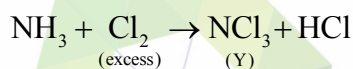
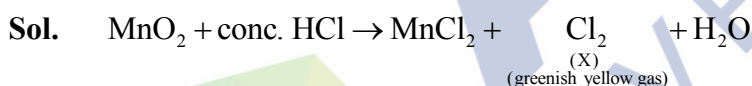
(A) **X** is used for sterilizing drinking water.

(B) **Y** has a planar structure.

(C) **Z** is used in the enrichment of ^{235}U .

(D) **Y** is a stronger Lewis base than ammonia.

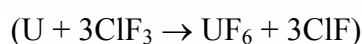
Ans. (A,C)



(A) Cl_2 is used for sterilizing drinking water

(B) NCl_3 is non-planar as hybridization of nitrogen is sp^3 (pyramidal)

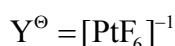
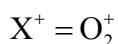
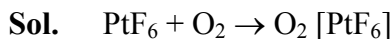
(C) ClF_3 is used in enrichment of ^{235}U to produce volatile UF_6



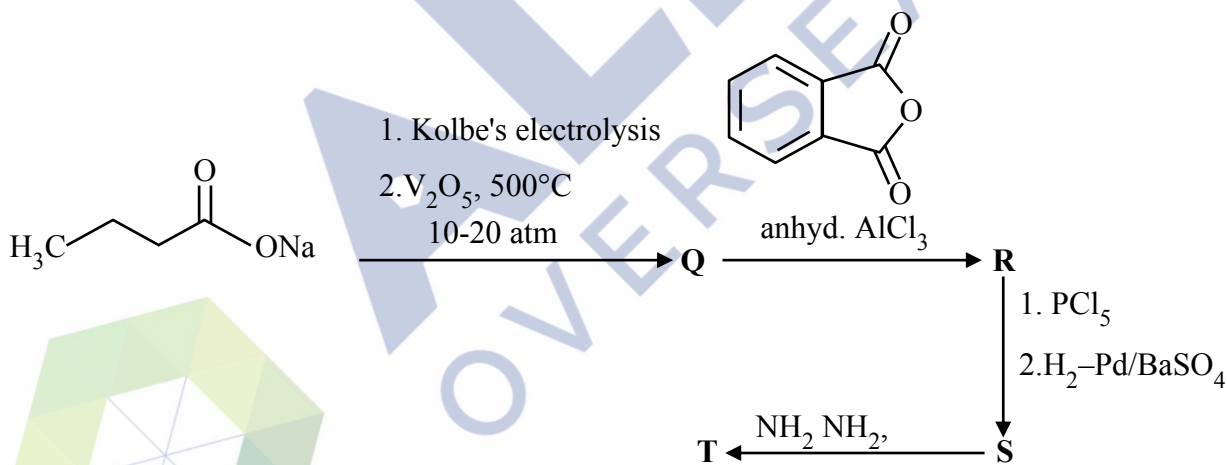
(D) NCl_3 is weaker Lewis base than NH_3 because the highly electronegative chlorine atoms pull electron density away from the nitrogen ($-I$ effect)

7. Reaction of PtF_6 with oxygen (O_2) gas results in the formation of an ionic compound, X^+Y^- .
 Correct statement(s) is (are)
 (A) The bond order of X^+ is 1.5.
 (B) Valence **d**-orbitals of the metal ion in X^+Y^- has 5 electrons.
 (C) PtF_6 acts as an oxidant in this reaction.
 (D) PtF_6 acts as a fluorinating agent in this reaction.

Ans. (B,C)



- (A) Bond order of O_2^+ is 2.5
 (B) Electronic configuration of Pt is $[\text{Xe}]4f^{14} 5d^9 6s^1$
 $[\text{PtF}_6]^- \Rightarrow \text{Pt}^{+5} :- 4f^{14} 5d^5$
 5 electron is valence d orbital
 (C) PtF_6 oxidizes O_2 into O_2^+ hence act as oxidant
 (D) In this reaction fluorination does not take place
8. In the following reaction sequence **Q**, **R**, **S** and **T** are the major products.

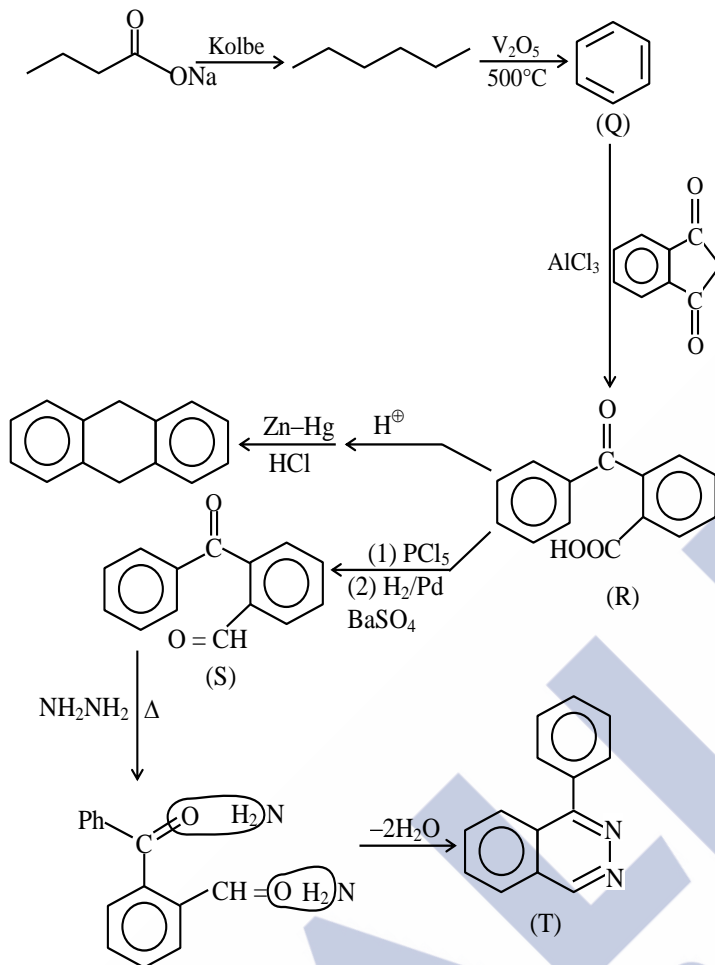


The correct statement(s) about **Q**, **R**, **S** and **T** is (are)

- (A) **S** on warming with ammoniacal AgNO_3 results in the formation of silver mirror.
 (B) **Q** on treatment with Cl_2 (excess)/ UV gives gammaxane.
 (C) **T** is a heterocyclic compound.
 (D) **R** on acid catalyzed intermolecular cyclization followed by treatment with $\text{Zn-Hg}/\text{HCl}$ gives 9, 10-dihydroxyanthracene.

Ans. (A,B,C)

Sol.

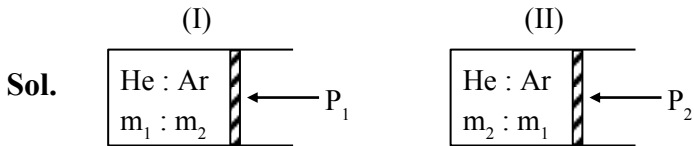


SECTION-3 : (Maximum Marks : 16)

- This section contains **FOUR (04)** questions.
- The answer to each question is a **NUMERICAL VALUE**.
- For each question, enter the correct numerical value corresponding to the answer using in the designated place using the mouse and the on-screen virtual numeric keypad.
- If the numerical value has more than two decimal places, **truncate/round-off** the value to **TWO** decimal places.
- Answer to each question will be evaluated **according to the following marking scheme:**
Full Marks : +4 If **ONLY** the correct numerical value is entered in the designated place;
Zero Marks : 0 In all other cases.

9. The cylinders, both fitted with frictionless pistons, are filled with mixtures of He and Ar gases. In the first cylinder, the masses of He and Ar are m_1 and m_2 , respectively. In the second cylinder, the masses of He and Ar are m_2 and m_1 , respectively the molar mass of Ar is 10 times the molar mass of He. The external pressure applied by the piston on the first cylinder needs to be 5 times that on the second cylinder so that the volume of the gas mixtures in both the cylinders are equal at the same temperature. Assuming He and Ar behaves like ideal gases, the value of (m_1/m_2) is _____.

Ans. (9.80)



Given $M_{Ar} = 10 M_{He}$

$M_{He} = M$

$P_1 = 5 P_2$

$V_1 = V_2 = V$

$T_1 = T_2 = T$

Applying ideal gas equation :

vessel (I) $\Rightarrow P_1 V = \left[\frac{m_1}{M} + \frac{m_2}{10M} \right] RT$

vessel (II) $\Rightarrow P_2 V = \left[\frac{m_2}{M} + \frac{m_1}{10M} \right] RT$

Dividing (II) / (I) $\Rightarrow \frac{P_2}{P_1} = \frac{\frac{m_2}{M} + \frac{m_1}{10M}}{\frac{m_1}{M} + \frac{m_2}{10M}} = \frac{1}{5}$

$\Rightarrow 5m_2 + \frac{m_1}{2} = m_1 + \frac{m_2}{10}$

$\Rightarrow 5m_2 - \frac{m_2}{10} = m_1 - \frac{m_1}{2}$

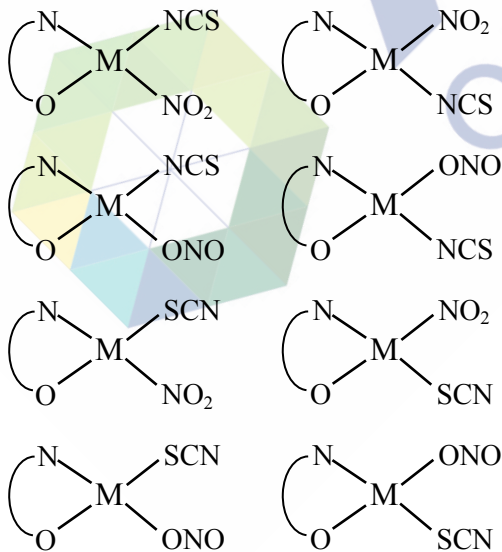
$\Rightarrow \frac{49m_2}{10} = \frac{m_1}{2} \Rightarrow \frac{m_1}{m_2} = 9.8$

Ans 9.80

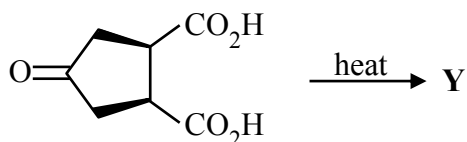
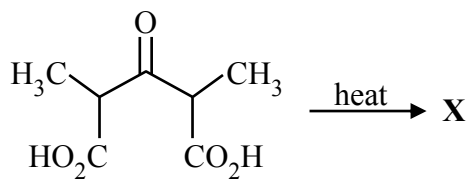
10. The total number of all possible isomers for the square planar complex with formula $K[M(NCS)(NO_2)(gly)]$ is $\underline{\hspace{2cm}}$ (M = metal ion and gly = $\overline{NH_2CH_2COO^-}$)

Ans. (8.00)

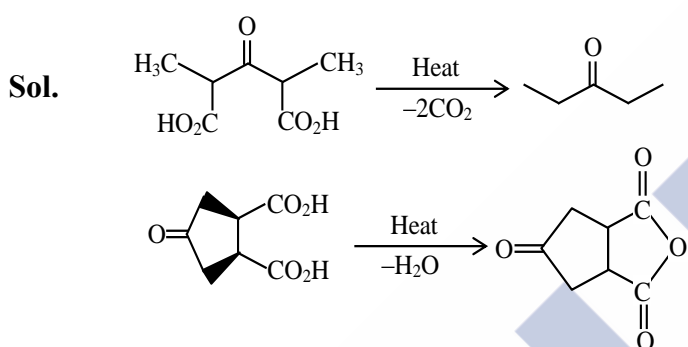
Sol. Total geometrical isomers are 8 which are given below



11. The sum of total number of carbonyl groups ($>C=O$) present in the major products **X** and **Y** in the following reactions is _____.



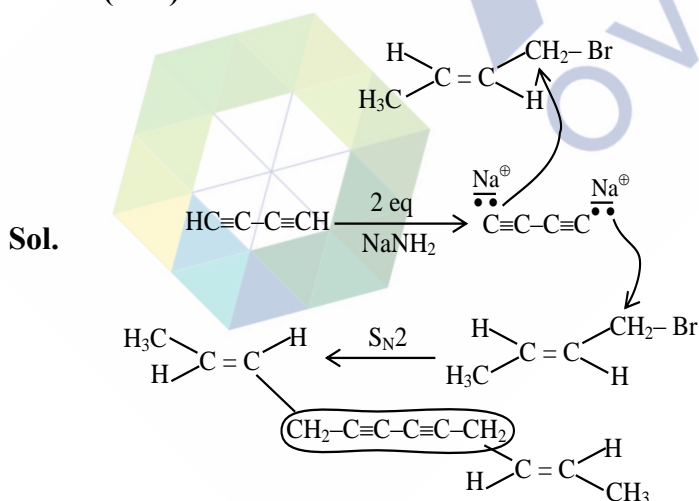
Ans. (4.00)



Ans.(4)

12. Treatment of buta-1,3-diyne with NaNH_2 (2 equivalents), followed by reaction with excess of $\text{trans-CH}_3\text{-CH=CH-CH}_2\text{-Br}$ gives **X** as the major product. The maximum number of carbon atoms that are collinear (in a straight line) in **X** is _____.

Ans. (6.00)



6 Collinear (straight)

SECTION-4 : (Maximum Marks : 16)

- 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 (P), (Q), (R) and (S) and **List-II** has **Five** entries (1), (2), (3), (4) and (5).
- **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 : +4 **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.

13. **List-I** contains various physical/chemical processes, and **List-II** contains combinations of changes in enthalpy (ΔH) and entropy (ΔS). Match each entry in **List-I** to appropriate entry in **List-II**, and choose the correct option.

List-I		List-II	
(P)	Physisorption	(1)	$\Delta H > 0$ and $\Delta S > 0$
(Q)	Diamond \rightarrow Graphite	(2)	$\Delta H < 0$ and $\Delta S < 0$
(R)	Denaturation of protein	(3)	$\Delta H < 0$ and $\Delta S = 0$
(S)	Propene \rightarrow Cyclopropane	(4)	$\Delta H > 0$ and $\Delta S < 0$
		(5)	$\Delta H < 0$ and $\Delta S > 0$

(A) P \rightarrow 2; Q \rightarrow 3; R \rightarrow 5; S \rightarrow 4

(B) P \rightarrow 4; Q \rightarrow 3; R \rightarrow 5; S \rightarrow 1

(C) P \rightarrow 2; Q \rightarrow 5; R \rightarrow 1; S \rightarrow 4

(D) P \rightarrow 2; Q \rightarrow 5; R \rightarrow 1; S \rightarrow 3

Ans. (C)

Sol. (P) Physisorption $\Rightarrow x(g) \rightarrow x(s)$
 $\Rightarrow \Delta S < 0, \Delta H < 0$

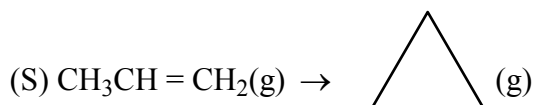
(Q) Diamond \rightarrow Graphite
 $\Rightarrow \Delta S > 0, \Delta H < 0$

Graphite has weaker vander waal forces of attraction between layers & hence, greater disorder & graphite is more stable in normal condition

(R) Denaturation of protein

$$\Delta H > 0 \text{ [Heat absorption]}$$

$$\Delta S > 0 \text{ [relative bonds between polymer protein chain break]}$$

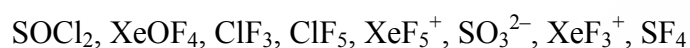


$$\Delta H > 0 \text{ [Cyclopropane is unstable due to angular strain]}$$

$$\Delta S < 0 \text{ [}\therefore \text{ open chain has more freedom of rotation]}$$

$$\Rightarrow \text{P} - 2 ; \text{Q} - 5 ; \text{R} - 1 ; \text{S} - 4$$

14. Consider the following species :



List-I contains different molecular shapes and **List-II** contains total number of species with the same molecular shapes from the given species. Match each entry in **List-I** with the appropriate entry in **List-II** and choose the correct option.

List-I		List-II	
(P)	See-saw	(1)	One
(Q)	T-Shaped	(2)	two
(R)	Trigonal Planar	(3)	three
(S)	Square Pyramidal	(4)	four
		(5)	zero

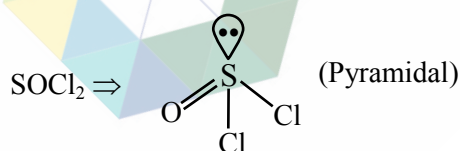
(A) $\text{P} \rightarrow 1; \text{Q} \rightarrow 2; \text{R} \rightarrow 5; \text{S} \rightarrow 3$

(B) $\text{P} \rightarrow 5; \text{Q} \rightarrow 4; \text{R} \rightarrow 2; \text{S} \rightarrow 3$

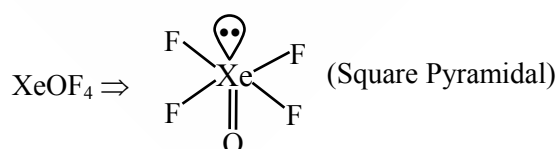
(C) $\text{P} \rightarrow 3; \text{Q} \rightarrow 2; \text{R} \rightarrow 1; \text{S} \rightarrow 4$

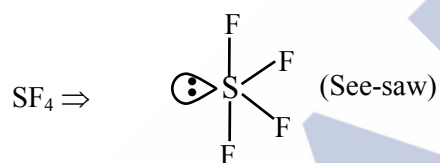
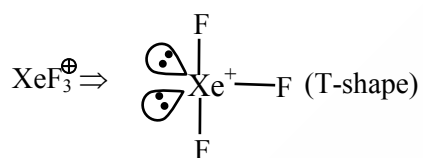
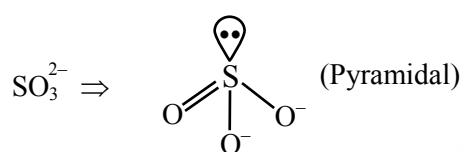
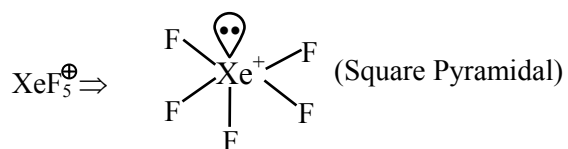
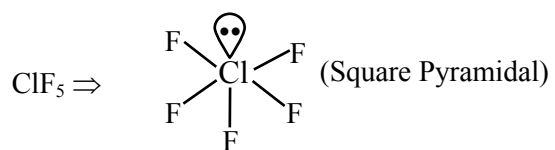
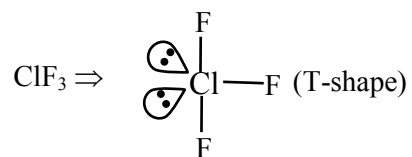
(D) $\text{P} \rightarrow 1; \text{Q} \rightarrow 3; \text{R} \rightarrow 5; \text{S} \rightarrow 4$

Ans. (A)

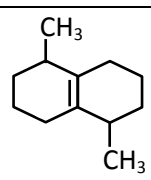
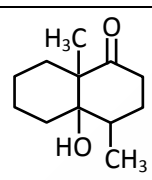
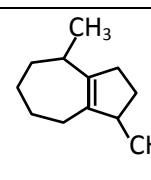
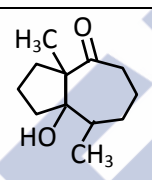
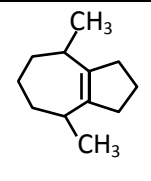
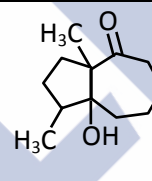
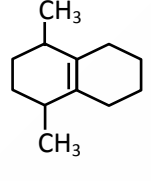
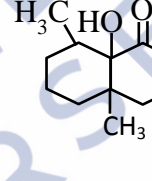
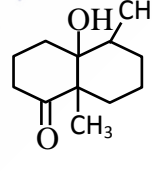


Sol.



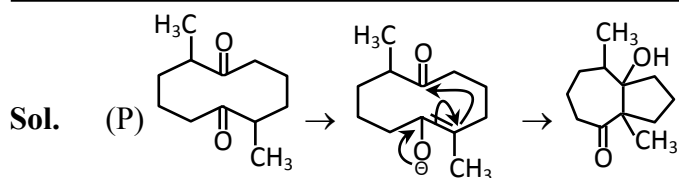


15. The **List-II** contains products obtained from the reaction of compounds in **List-I** with $O_3/Zn-H_2O$ followed by cyclization (via more stable enolate) in the presence of aqueous $NaOH$. Match each entry in **List-I** with appropriate entry in **List-II** and choose the correct option.

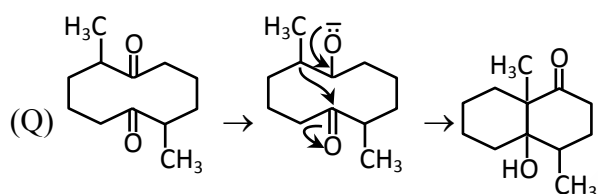
List-I		List-II	
(P)		(1)	
(Q)		(2)	
(R)		(3)	
(S)		(4)	
		(5)	

- (A) P \rightarrow 2; Q \rightarrow 4; R \rightarrow 1; S \rightarrow 3
 (B) P \rightarrow 3; Q \rightarrow 4; R \rightarrow 5; S \rightarrow 2
 (C) P \rightarrow 2; Q \rightarrow 1; R \rightarrow 5; S \rightarrow 3
 (D) P \rightarrow 3; Q \rightarrow 5; R \rightarrow 4; S \rightarrow 2

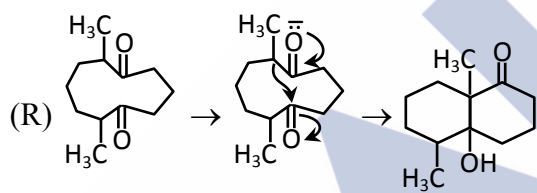
Ans. (C)



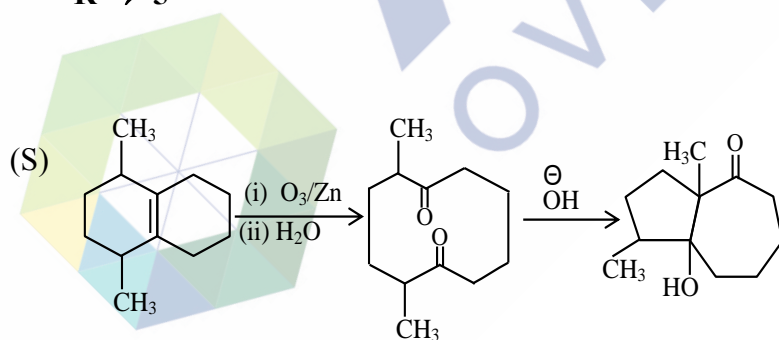
P → 2



Q → 1



R → 5



S → 3

16. Match the major products obtained in the reactions given in **List-I** with the corresponding structures in **List-II** and choose the correct option.

List-I		List-II	
(P)		(1)	
(Q)		(2)	
(R)		(3)	
(S)		(4)	
		(5)	

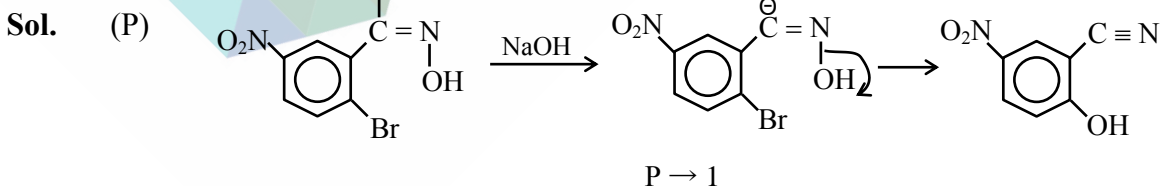
(A) P → 2; Q → 1; R → 5; S → 4

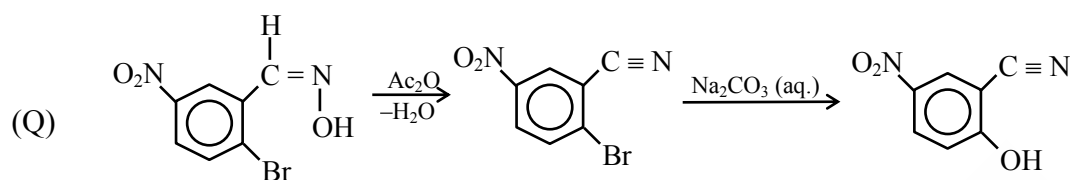
(B) P → 1; Q → 2; R → 4; S → 5

(C) P → 1; Q → 2; R → 3; S → 4

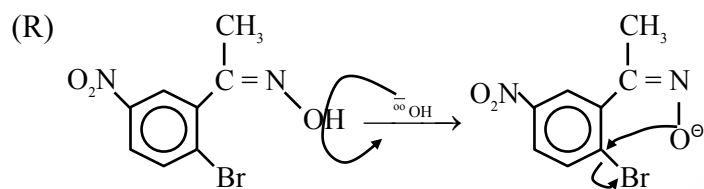
(D) P → 2; Q → 1; R → 3; S → 5

Ans. **(B)**

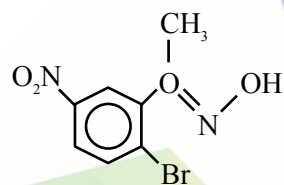
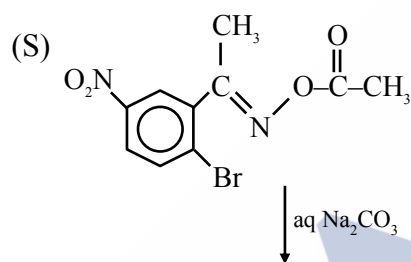
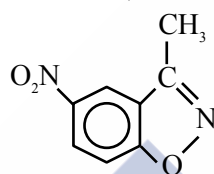




Q → 2



R → 4



S → 5