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JEE (MAIN) 2025

MEMORY BASED QUESTIONS & TEXT SOLUTION

SHIFT-1

DATE & DAY: 02nd April 2025 & Wednesday

PAPER-1

Duration: 3 Hrs.
Time: 09:00 – 12:00 IST

SUBJECT: CHEMISTRY

Selections in JEE (Advanced)/ IIT-JEE Since 2002	Selections in JEE (Main)/ AIEEE Since 2009	Selections in NEET (UG)/ AIPMT/AIIMS Since 2012
52395	257576	22494

Admission Open for 2025-26

Target: JEE (Advanced) | JEE (Main) | NEET (UG) | PCCP (Class V to X)

100% Scholarship on the basis of Class 10th & 12th & JEE (Main) 2025 %ile/ AIR

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PART : CHEMISTRY

1. Among Cr, Mn, Co & Fe which exists as $[M(CN)_6]^{3-}$. The metal with maximum $E^{\circ}(M^{3+}/M^{2+})$ has n electron in eg. orbitals. Find n.

Ans. **(0)**

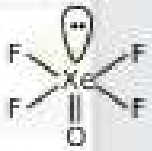
Sol. $E^{0}_{M^{3+}/M^{2+}}$ is max. for Co

$[Co(CN)_6]^{3-} \Rightarrow Co^{3+} + 5FL \Rightarrow t_{2g}^{6}, e_g^{0}$

Number of e^- in eg orbital = 0

2. Find shape of Axy, x, y → 1st & 2nd most E.N. A react monoatomic element of p-block with lowest I.E..

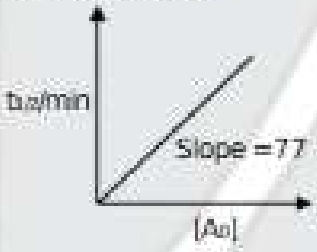
Sol. A → Xe; X → F; Y → O



Shape – Square pyramidal.

3. After 10 min conc. of [A] = $x \times 10^{-2}$

Initial conc. = 2.5×10^{-2} M



Ans. **(18)**

Sol. For Zero order reaction $\frac{1}{2k} = 77$ $\quad \therefore \; k = 0.0065$

$C_t = C_0 - kt$

$x \times 10^{-2} = 2.5 \times 10^{-1} - 0.0065 \times 10$

$\therefore \; x = 18.5$

4. **Statement-I :** Al has greater covalent radius than Ga.

Statement-II : Al has greater ionic radius than Ga.

(1) Both statement I and statement II are false

(2) Both Statement I and statement II are true

(3) Statement I is true but statement II is false

(4) Statement I is false but statement II is true

Ans. **(3)**

Sol. **Statement-I :** True

Statement-II : False

5. $P_S = 500$ $n_A = 1$ mole
$P_A^0 = 200$ $n_B = 3$ mole
$P_B^0 = ?$
Find which component will be less volatile?

Sol. $P_S = P_A^0 X_A + P_B^0 X_B$

$500 = 200 \times \frac{1}{4} + P_B^0 \times \frac{3}{4}$

$2000 = 200 + 3P_B^0$

$P_B^0 = 600$ mm mg.

So, A will be less volatile.

6. $CaCO_3 + 2HCl \longrightarrow CaCl_2 + CO_2 + H_2O$
mass of $CaCl_2 = ?$
100 g of $CaCo_3$ and 250 ml of 0.76 M of HCl are mixed.

Sol. $CaCO_3 + 2HCl \longrightarrow CaCl_2 + Co_2 + H_2O$
$n = 1$ 0.19 (LR)
n_s 0.095
$\therefore m_{CaCl_2}$ produced $= 0.095 \times 111 = 10.545$ g

7. Which of these carbon atoms forms least and most stable free radical respectively

$HC^{1}\equiv C-CH_2^{2}-CH_2^{3}-CH_2-CH_3^{4}$

(1) 1, 2 (2) 2, 3 (3) 2, 1 (4) 1, 3

8. Which of the following gives fastest hydrolysis:

(1) $CH_3-\underset{\underset{O}{\|}}{C}-Cl$ (2) $CH_3-\underset{\underset{O}{\|}}{C}-NH_2$ (3) $CH_3-\underset{\underset{O}{\|}}{C}-O-CH_3$ (4) $CH_3-\underset{\underset{O}{\|}}{C}-O-\underset{\underset{O}{\|}}{C}-CH_3$

9. Identify optically in active amino acid.
Alanine
Valine
Glycine
Aspartic acid

10. Which is correct order of basic strength in aq. medium
(1) CH_3NH_2 (2) $(CH_3)_2NH$ (3) $(CH_3)_3N$ (4) NH_2-NH_2

11. Which is anti aromatic molecule

(1)  (2)  (3)  (4) 

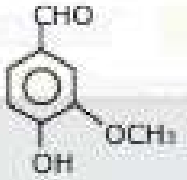
12. Correct statement is

(1) All naturally occurring amino acids are optically active

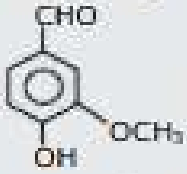
(2) All natural amino acids except glycine has 1 chiral centre

(3) All natural amino acids except proline have primary amine functional group

(4) All natural occurring amino acids are neutral amines acids.

13. **Statement-I :** 

reacts with conc. NaOH to give product that gives Tollens reaction positive.

Statement-II :  reacts with NaOH to give Aldol reaction.

(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

14. But-2-en + $Br_2 \xrightarrow{CCl_4}$ (A)

(A) $\xrightarrow[\text{excess}]{NaNH_2}$ (B) $\xrightarrow{HgSO_4,H_2SO_4}$ (C)

Identify (C).