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JEE (MAIN) 2026

MEMORY BASED QUESTIONS & TEXT SOLUTION

SHIFT-1

DATE & DAY: 06th April 2026 & Monday

PAPER-1

Duration: 3 Hrs.

Time: 09:00 – 12:00 IST

SUBJECT: CHEMISTRY

Selections in JEE (Advanced)/
IIT-JEE Since 2002

52979

Classroom: 35901 | Distance: 17078

Selections in JEE (Main)/
AIEEE Since 2009

262693

Classroom: 194471 | Distance: 68222

Selections in NEET (UG)/
AIPMT/AIIMS Since 2012

22733

Classroom: 15409 | Distance: 7324

Admission Open for 2026-27

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

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PART : CHEMISTRY

1. If at infinite dilution, molar conductivities of BaCl_2 , HCl and H_2SO_4 , are $x_1, x_2, x_3 \text{ S cm}^2 \text{ mol}^{-1}$ respectively. Find solubility product of BaSO_4 .

Given K_{BaSO_4} (Specific conductance) = $x \text{ S cm}^{-1}$

(1) $\left(\frac{x}{x_1+x_3-2x_2}\right)^2 \times 10^6$

(2) $\left(\frac{x_1+x_3-2x_2}{x}\right)^2 \times 10^6$

(3) $\left(\frac{x}{x_1+x_3-x_2}\right)^2 \times 10^3$

(4) $\left(\frac{x}{x_1+x_3-x_2}\right)^2 \times 10^6$

Ans. (1)

Sol. Using Kohlrausch's Law

$$\Lambda_{\text{M BaSO}_4}^\circ = x_1 + x_3 - 2x_2$$

$$\Lambda_{\text{M}}^\circ = \frac{\kappa \times 1000}{S} \Rightarrow$$

$$S = \frac{\kappa \times 1000}{\Lambda_{\text{M}}^\circ} \times 10^3 \text{ 'M'}$$

$$\Rightarrow K_{\text{sp}} = S^2$$

2. For given four processes compare magnitude of work

Process **Work**

(I) Isothermal multistep Expansion $\rightarrow W_1$

(II) Isothermal single-step Expansion $\rightarrow W_2$

(III) Isothermal single-step Compression $\rightarrow W_3$

(IV) Isothermal multi-step Compression $\rightarrow W_4$

Which of the following is correct option

(1) $|W_1| > |W_2| > |W_3| > |W_4|$

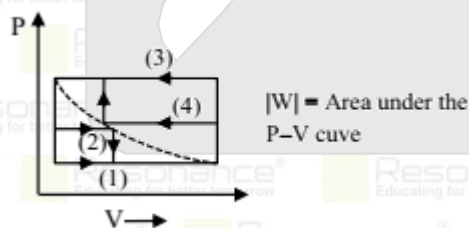
(2) $|W_1| < |W_2| < |W_3| < |W_4|$

(3) $|W_1| < |W_3| < |W_2| < |W_4|$

(4) $|W_2| < |W_1| < |W_4| < |W_3|$

Ans. (4)

Sol.



3. A solution contain 0.25 moles of non-volatile solute dissolved in one mole of solvent. Then calculate % of vapour pressure of solution relative to vapour pressure of pure solvent?

(1) 20

(2) 40

(3) 60

(4) 80

Ans. (4)

Sol.

$$P_S = P^0 \cdot X_A$$

$$\frac{P_S}{P^0} = X_A = \frac{1}{1 + 0.25} = 0.80$$

$$\% = 0.8 \times 100 = 80$$

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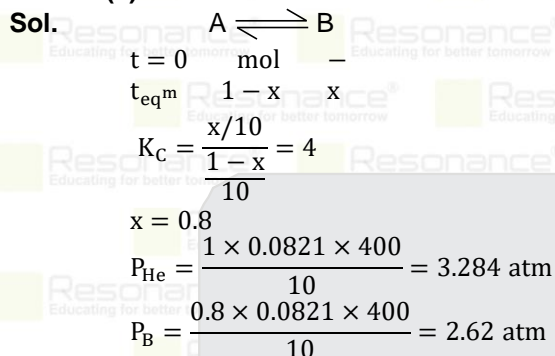
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4. 1 mole of He and 1 mole A are taken in 10 L rigid container at 400 K and equilibrium $A \rightleftharpoons B$ is established. Calculate partial pressure of He and B at equilibrium if $K_C = 4$.
- (1) 3.28 atm, 2.62 atm (2) 2.6 atm, 3.28 atm
(3) 2.6 atm, 2.6 atm (4) 3.28 atm, 3.28 atm

Ans. (1)



5. An oxide of iron contains 69.9% iron. Find its empirical formula.
(Given : Atomic masses Fe = 56, O = 16)

- (1) Fe₃O₄ (2) Fe₂O₃ (3) FeO₃ (4) FeO

Ans. (2)

Sol.

	Fe	Oxyg
Moles :	$\frac{69.9}{56}$	$\frac{30.1}{16}$
Molar Ratio :	1	1.5
Molar Ratio :	2	3

Answer : Fe₂O₃

6. Column-I

- (P) 2 s
(Q) 3 s
(R) 4 p
(S) 3 d

- Column-II

- (i) Radial node = 2 Angular node = 1
(ii) Radial node = 0 Angular node = 2
(iii) Radial node = 1 Angular node = 0
(iv) Radial node = 2 Angular node = 0

Match the correct list -

- (1) P-(iv), Q-(iii), R-(ii), S-(i) (2) P-(iii), Q-(iv), R-(i), S-(ii)
(3) P-(i), Q-(ii), R-(iii), S-(iv) (4) P-(ii), Q-(i), R-(iv), S-(iii)

Ans. (2)

Sol. Radial nodes = $n - \ell - 1$

Angular nodes = ℓ

7. If minimum wavelength for H -atom in Lyman series is ' x ', then maximum wavelength of Balmer series of He⁺ ion in terms of ' x ' will be

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

Ans. (3)

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Sol.

$$\frac{1}{x} = R \times 1^2 \times \left(\frac{1}{1^2} - \frac{1}{\infty^2}\right) \#(1)$$

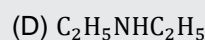
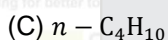
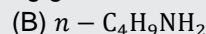
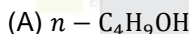
$$\frac{1}{\lambda} = R \times 2^2 \times \left(\frac{1}{2^2} - \frac{1}{3^2}\right) \#(2)$$

$$\frac{1}{\lambda} = R \times 4 \times \frac{5}{4 \times 9}$$

$$\frac{1}{\lambda} = \frac{1}{x} \times \frac{5}{9}$$

$$\lambda = \frac{9x}{5}$$

8. Find correct order of increasing boiling point in the following given molecules :



(1) $C < D < B < A$

(2) $A < B < D < C$

(3) $D < C < A < B$

(4) $B < C < DA$

Ans. (1)

Sol. Boiling point \propto Intermolecular attraction
 \propto Number of H-bonding

9. Match disease with the deficiency.

	Column-I		Column-I
(A)	Scurvy	(P)	Pyridoxine
(B)	Convulsions	(Q)	Vitamin-A
(C)	Cheilosis	(R)	Ascorbic acid
(D)	Xerophthalmia	(S)	Riboflavin

(1) A-R ; B-P ; C-S ; D-Q

(2) A-P ; B-R ; C-S ; D-Q

(3) A-S ; B-P ; C-R ; D-Q

(4) A - R ; B - S ; C - P ; D - Q

Ans. (1)

Sol. Vitamin-A \rightarrow Xerophthalmia
Vitamin-C (Ascorbic acid) \rightarrow Scurvy
Vitamin-B₂ (Cheilosis) \rightarrow Cheilosis
Vitamin-B₆ (Pyridoxine) \rightarrow Convulsions

10. Statement-I : Al is more electropositive than Tl because, $E_{Al^{3+}/Al}^0$ is negative & $E_{Tl^{3+}/Tl}^0$ is positive.

Statement-II : For B-atom ; sum of first three ionization energy is very high thus it forms covalent compounds.

(1) Both statement-I & statement-II are correct

(2) Both statement-I & statement-II are incorrect

(3) Statement-I is correct but statement-II is incorrect

(4) Statement-I is incorrect but statement-II is correct.

Ans. (1)

Sol. $E_{Al^{3+}/Al}^0 = -1.66$

$E_{Tl^{3+}/Tl}^0 = 1.26$

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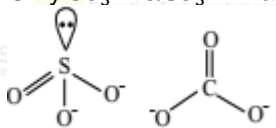
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11. Which of the following pair of specie(s) have different lewis structure

- (A) SO_3^{2-} , CO_3^{2-} (B) O_2^{2-} , F_2
 (C) CN^- , CO (D) NH_3 , H_3O^+
 (E) MnO_4^- , CrO_4^{2-}
 (1) (A) only (2) (A) & (B) only
 (3) (A) & (E) only (4) (C) & (D) only

Ans. (1)

Sol. Only SO_3^{2-} & CO_3^{2-} has different structure



12. Consider the statements

- (A) In Zeigler -Natta catalyst, d-block central metal ion has spin magnetic moment of 2.84 BM
 (B) In Zeigler -Natta catalyst, p-block element has + 3 oxidation state
 (C) Basic vanadium oxide is used in production of H_2SO_4
 (D) Catalyst used in wacker's process has central metal with d^8 configuration
 (1) (A), (B) & (C) are correct (2) (B) & (D) are correct
 (3) (C) & (D) are correct (4) (B), (C) & (D) are correct

Ans. (2)

Sol. Ziegler natta catalyst : $\text{TiCl}_3/\text{TiCl}_4 + \text{Al}(\text{C}_2\text{H}_5)_3$

V_2O_5 is amphoteric oxide used in production of H_2SO_4

PdCl_2 is used in Wacker's process.

13. Find correct order of increasing boiling point in the following given molecules :

- (A) $n - \text{C}_4\text{H}_9\text{OH}$ (B) $n - \text{C}_4\text{H}_9\text{NH}_2$
 (C) $n - \text{C}_4\text{H}_{10}$ (D) $\text{C}_2\text{H}_5\text{NHC}_2\text{H}_5$
 (1) $\text{C} < \text{D} < \text{B} < \text{A}$ (2) $\text{A} < \text{B} < \text{D} < \text{C}$
 (3) $\text{D} < \text{C} < \text{A} < \text{B}$ (4) $\text{B} < \text{C} < \text{D} < \text{A}$

Ans. (1)

Sol. Boiling point \propto Intermolecular attraction
 \propto Number of H-bonding

14. Match disease with the deficiency.

	Column-I		Column-I
(A)	Scurvy	(P)	Pyridoxine
(B)	Convulsions	(Q)	Vitamin-A
(C)	Cheilosis	(R)	Ascorbic acid
(D)	Xerophthalmia	(S)	Riboflavin

(1) A-R ; B-P ; C-S ; D-Q

(2) A-P ; B-R ; C-S ; D-Q

(3) A-S ; B-P ; C-R ; D-Q

(4) A-R ; B-S ; C-P ; D-Q

Ans. (1)

Sol. Vitamin-A \rightarrow Xerophthalmia

Vitamin-C (Ascorbic acid) \rightarrow Scurvy

Vitamin-B₂ (Cheilosis) \rightarrow Cheilosis

Vitamin-B₆ (Pyridoxine) \rightarrow Convulsions

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15. Match with tab test of amino acids.

Column-I		Column-II	
A	Glutamine	I	Hinsberg test
B	Lysine	II	Neutral FeCl_3
C	Tyrosine	III	Cerric ammonium nitrate
D	Serine	IV	Hoffmann Bromamide

(1) A -I, B-IV, C-III, D-II

(2) A -IV, B-I, C-II, D-III

(3) A -I, B-III, C-IV, D-II

(4) A -IV, B-II, C-I, D-III

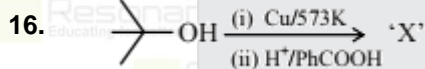
Ans. (2)

Sol. Glutamine has amide functional group inside chain. So it gives Hoffmann bromamide reaction.

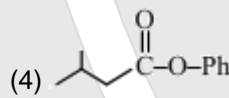
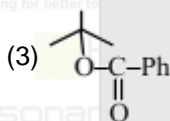
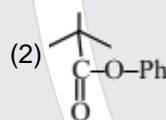
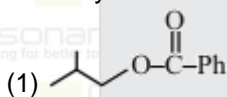
Lysine has 1° amine group. So it gives +ve Hinsberg test.

Tyrosine has phenolic OH. So it gives +ve test with neutral FeCl_3 .

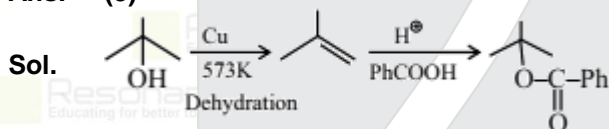
Serine has alcoholic OH group. So it gives +ve test with cerric ammonium nitrate.



'X' may be :



Ans. (3)



17. Given below are two statements :

Statement-I : 2,4-Diethylcyclohexanone and 2-methyl-6-propylcyclohexanone are metamers.

Statement-II : 2,2,6,6-Tetraethylcyclohexanone will show tautomerism.

Choose correct options :

(1) Statement-I and Statement-II both are correct.

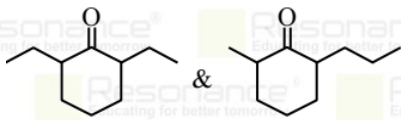
(2) Statement-I and Statement-II both are incorrect.

(3) Statement-I is correct but Statement-II is incorrect.

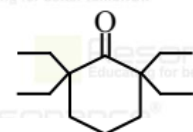
(4) Statement-I is incorrect but Statement-II is correct.

Ans. (3)

Sol.



are metamers



will not show tautomerism.

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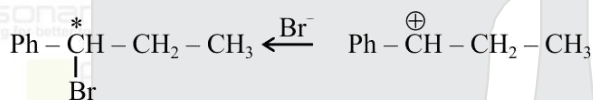
18. **Statement-I** : 3-Phenylprop-1-ene will react with HBr and give alkyl halide as major product having 1 chiral carbon atom.

Statement-II : Aryl chloride and Aryl cyanide both can be formed by gattermann and sandmeyer reaction.

- (1) Both Statement I and Statement II are incorrect.
 (2) Statement I is correct but Statement II is incorrect.
 (3) Statement I is incorrect but Statement II is correct.
 (4) Both Statement I and Statement II are correct.

Ans. (2)

Sol.



Chiral carbon

Aryl cyanide is not formed by Gattermann reaction.

19. Given below are two statements :

Statement-I : Methane can be prepared by decarboxylation of sodium acetate, by Kolbe's electrolysis and by CH_3MgBr .

Statement-II : Methane can't be prepared by unsaturated hydrocarbon and by Wurtz reaction.

Choose correct options :

- (1) Statement-I and Statement-II both are correct.
 (2) Statement-I and Statement-II both are incorrect.
 (3) Statement-I is correct but Statement-II is incorrect.
 (4) Statement-I is incorrect but Statement-II is correct.

Ans. (4)

Sol.

Methane can not be prepared by Kolbe's electrolysis process.

20. Hydrolysis of sucrose follows 1st order kinetics to produce glucose and fructose. If ($t_{1/2}$) for decomposition of sucrose is 3 hr . Find % of sucrose left after 6 hr .

Ans. (25)

Sol. Sucrose + H_2O → glucose + fructose

$$t_{1/2} = 3\text{hr}$$

For 1st order

$$t_{75\%} = 2 \times t_{1/2}$$

So t = 6hr,

75% of sucrose decomposed

So 25% of sucrose remains after 6 hr.

21. For the reversible reaction at 300 K, $\Delta H^\circ = 28.4\text{KJ/ mole}$ and equilibrium constant $K = 1.8 \times 10^{-7}$, then calculate magnitude of ΔS° in Joule/ K -mole.

[Given $\log 2 = 0.3$, $\ln 10 = 2.3$,

$R = 8.314 \text{ J/Kmole}$, $\log 3 = 0.47$]

Ans. (34 J/K-mole)

Sol.

$$\Delta G^\circ = -RT \ln K_{\text{eq}}$$

$$\Delta H^\circ - T\Delta S^\circ = -2.303RT \log K_{\text{eq}}^m$$

$$\Delta S^\circ = \frac{\Delta H^\circ}{T} + 2.303R \log K_{\text{eq}}^m = \Delta S^\circ$$

$$= \frac{28.4 \times 10^3}{300} + 2.303 \times 8.314 \log [18 \times 10^{-8}]$$

$$= -34.47 \text{ J/K-mole}$$

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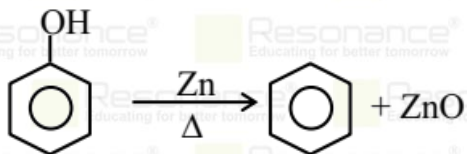
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22. 4.7 g of phenol $\xrightarrow{\text{Zn}, \Delta}$ 'X'
If reaction goes to 60% yield of X. Find number of moles of 'X' ... $\times 10^{-2}$ are formed.

Ans. (3)
Sol.



$$\text{Moles of phenol} = \frac{4.7}{94.0} = 0.05 \text{ mol}$$

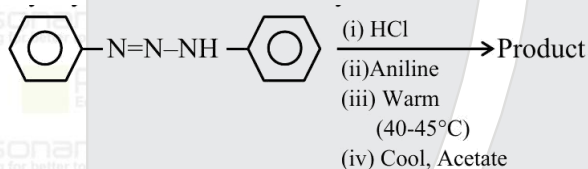
Reaction is 1:1 so 0.05 mole of phenol will give

0.05 mole of benzene on 100% yield

For 60% yield = $0.05 \times 0.60 = 0.03 \text{ mol}$.

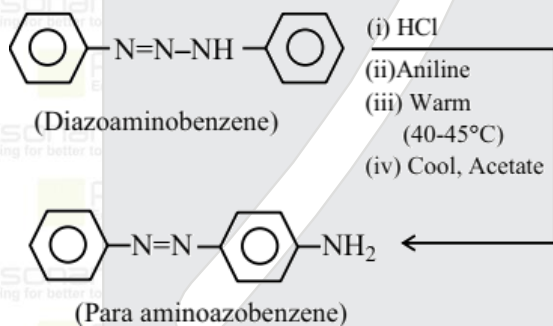
mol of 'X' = $3 \times 10^{-2} \text{ mol}$

23.



Find percentage of nitrogen in the final product.

Ans. (21.30%)
Sol.



- HCl catalysed hydrolysis.
- Aniline acts as a solvent and reactant.
- The mixture is gently heated to facilitate rearrangement.

After the reaction is complete, the mixture is cooled and treated with sodium acetate to neutralise excess acid and precipitate the final product.

Mass percentage of nitrogen in final product

$$= \frac{42}{197} \times 100 = 21.30\%$$

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