

MEMORY BASED QUESTIONS JEE-MAIN EXAMINATION – APRIL 2026

(HELD ON SUNDAY 05th APRIL 2026)

TIME : 9:00 AM TO 12:00 NOON

CHEMISTRY

TEST PAPER WITH SOLUTION

1. For a first order reaction :
 $A(g) \rightarrow B(g) + C(g)$
 If initial pressure is P_0 and total pressure at time 't' is P_t . Then expression of rate constant 'K' is :

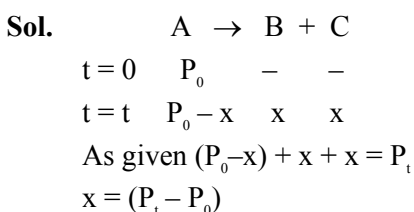
(1) $K = \frac{1}{t} \ln \left(\frac{P_0}{P_0 - P_t} \right)$

(2) $K = \frac{1}{t} \ln \left(\frac{P_0}{2P_0 - P_t} \right)$

(3) $K = \frac{1}{t} \ln \frac{2P_0}{P_0 - P_t}$

(4) $K = \frac{1}{t} \ln \frac{2P_0}{2P_0 - P_t}$

Ans. (2)



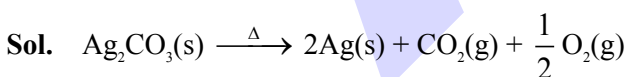
$$K = \frac{1}{t} \ln \frac{P_0}{P_0 - x} = \frac{1}{t} \ln \frac{P_0}{P_0 - (P_t - P_0)}$$

$$K = \frac{1}{t} \ln \frac{P_0}{2P_0 - P_t}$$

2. On heating 2.76 g of $Ag_2CO_3(s)$, some solid residue is left behind. Determine the mass of residue left.

- (1) 2.16 g (2) 4.32 g
 (3) 2.32 g (4) 1.08 g

Ans. (1)



2.76g

$$\frac{1}{100} \text{ mol}$$

$$\text{Moles of Ag(s)} = \frac{2}{100} \text{ mol}$$

Mass of residue = 2.16 g

3. Determine mole fraction of water in an aqueous solution of urea having 10% w/w urea.

- (1) 0.967
 (2) 0.086
 (3) 0.323
 (4) 0.867

Ans. (1)

Sol. Mass ratio = mol ratio \times GMM ratio

$$\frac{10}{90} = \frac{n}{N} \times \frac{60}{18}$$

$$\frac{n}{N} = \frac{1}{30}$$

$$x_{H_2O} = \frac{W}{n+N} = \frac{30}{31} = 0.967$$

4. For reaction $A \rightleftharpoons B + C$

$\log K_p$	3.5	2.5	1.5
$\frac{1}{T} (K^{-1})$	0.04	0.05	0.06

Calculate $\frac{\Delta H}{R}$ (in Kelvin) based on above data.

(In nearest integer)

Ans. (230)

Sol. Using formula

$$\log K_2 - \log K_1 = \frac{\Delta H}{2.303 R} \left(\frac{1}{T_1} - \frac{1}{T_2} \right)$$

$$3.5 - 2.5 = \frac{\Delta H}{2.303 R} (0.05 - 0.04)$$

$$\frac{\Delta H}{R} = \frac{2.303}{0.01}$$

$$\frac{\Delta H}{R} = 230.3$$

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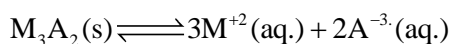


5. If solubility of sparingly soluble salt $M_3A_2(s)$ is 'x' gm/litre and 'y' is the molar mass (in gm/mole) of

salt, then determine the value of $\frac{[A^{3-}]}{K_{sp}}$.

- (1) $\frac{1}{36} \frac{y^4}{x^4}$ (2) $\frac{1}{54} \frac{y^4}{x^4}$
 (3) $\frac{1}{54} \frac{x^4}{y^4}$ (4) $\frac{1}{36} \frac{x^3}{y^3}$

Ans. (2)



Sol.	Molarity	$\frac{x}{y}$	-	-
		-	$3x/y$	$2x/y$

$$K_{sp} = [M^{+2}]^3 [A^{-3}]^2$$

$$K_{sp} = [3x/y]^3 [2x/y]^2$$

$$\text{Ratio of } \frac{[A^{-3}]}{K_{sp}} = \frac{2x/y}{\left[\frac{3x}{y}\right]^3 \left[\frac{2x}{y}\right]^2}$$

$$= \frac{1}{54} \frac{y^4}{x^4}$$

6. Half life of first order reaction is 6.93 min. What is the time required (in min.) to complete 99% of reaction [$\ln 2 = 0.693$]

- (1) 23.06 (2) 46.06
 (3) 13.86 (4) 20.79

Ans. (2)

$$\text{Sol. } t_{1/2} = \frac{\ln 2}{K} \Rightarrow K_1 = \frac{0.693}{6.93} \Rightarrow 0.1 \text{ min}^{-1}$$

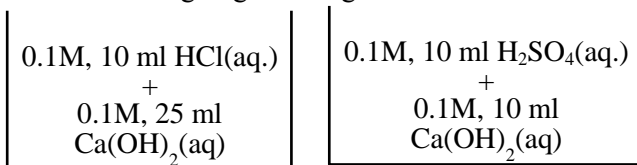
$$t_{99\%} = \frac{1}{K} \ln \left[\frac{A_0}{A_t} \right]$$

$$= \frac{1}{0.1} \ln \left[\frac{100}{1} \right] \Rightarrow \frac{2 \ln 10}{0.1}$$

$$= \frac{2 \times 2.303}{0.1}$$

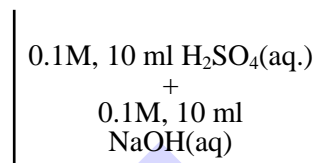
$$\Rightarrow 46.06 \text{ min}$$

7. Three solutions (A, B and C) are prepared according to given diagrams



Solution A

Solution B



Solution C

If pH of solutions A, B and C are respectively pH₁, pH₂ and pH₃ then correct option will be:

- (1) pH₃ < pH₂ < pH₁ (2) pH₃ > pH₂ > pH₁
 (3) pH₃ > pH₁ > pH₂ (4) pH₁ < pH₃ < pH₂

Ans. 1

Sol. Solution-A
 milli equivalent of HCl is = 1
 milli equivalent of Ca(OH)₂ is = 5
 so solution is basic

Solution-B
 milli equivalent of H₂SO₄ is = 2
 milli equivalent of Ca(OH)₂ is = 2
 so solution is neutral

Solution-C
 milli equivalent of H₂SO₄ is = 2
 milli equivalent of NaOH = 1
 so solution is acidic

8. From the following, number of compounds with sp³d hybridisation are:

- XeF₄, ICl₄[⊖], ICl₂[⊖], XeF₅[⊖], SF₄, XeF₂, ClF₃,
 BrF₅, NH₄[⊕]

Ans. (4)

- Sol. XeF₄: sp³d²
 ICl₄[⊖]: sp³d²
 ICl₂[⊖]: sp³d
 XeF₅[⊖]: sp³d³
 SF₄: sp³d
 XeF₂: sp³d
 ClF₃: sp³d
 BrF₅: sp³d²
 NH₄[⊕]: sp³



9. Which of the following property about Interstitial compound is **INCORRECT**?

- (1) They have high melting point, higher than those of pure metals.
- (2) They retain metallic conductivity
- (3) They are ionic in nature & are soft.
- (4) They are chemically inert.

Ans. (3)

Sol. Interstitial compounds are very hard.

10. Statement I : Sodium and Potassium dichromate are used as a primary standard in redox titrations.

Statement II : Phenolphthalein is weakly basic in nature hence it dissociates in acidic medium.

- (1) Both Statement I and Statement II are correct
- (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 incorrect

Ans. (4)

Sol. $\text{Na}_2\text{Cr}_2\text{O}_7$ is hygroscopic in nature and is not used as primary standard.

Phenolphthalein is weak acid.

11. Consider the following statements

- (A) Ground state electronic configuration of Cr is $[\text{Ar}]4s^13d^5$
- (B) Size of $2p_x$ orbital is smaller than $3p_y$
- (C) Heisenberg uncertainty principle is applicable only for electron.
- (D) $(\text{Energy of } 2s)_{\text{Hydrogen}} = (\text{Energy of } 2s)_{\text{Lithium}}$

The correct statements are

- (1) A & C
- (2) B & D
- (3) A & B
- (4) C & D

Ans. (3)

Sol. $E_{2s}(\text{H}) = E_{2s}(\text{Li})$

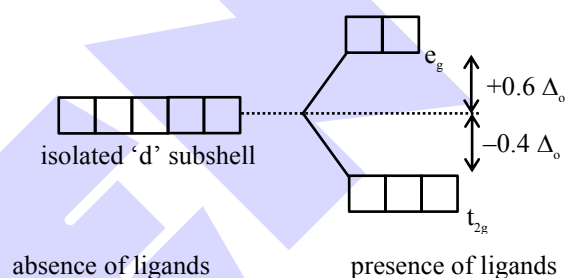
Heisenberg uncertainty principle is valid for all microscopic particles.

12. Statement I : An electron in e_g causes destabilization of $0.6 \Delta_o$ and an electron in t_{2g} causes stabilization of $0.4 \Delta_o$ as per CFT.

Statement II : All d-orbitals of transition elements are degenerate in absence of ligands but splitting occurs in presence of ligands.

- (1) Both Statement I and Statement II are correct
- (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 incorrect

Ans. (1)



Sol.

13. Consider the statements.

- (A) $\text{N-N} > \text{P-P}$ (Bond energy of single bond)
- (B) All oxidation states of N lying between +1 and +4 tend to disproportionate in acidic medium.
- (C) Maximum covalency of nitrogen is 4
- (D) Nitrogen can form $d_{\pi}-p_{\pi}$ bond with itself and other elements.
- (E) Nitrogen has maximum density in its group due to its small size.

The incorrect statements are :

- (1) A, B & D
- (2) A, D & E
- (3) B, C & E
- (4) A, C & E

Ans. (2)

Sol. $(\text{B.E.})_{\text{P-P}} > (\text{B.E.})_{\text{N-N}}$

Nitrogen cannot form $d_{\pi}-p_{\pi}$ bond

Nitrogen has least density in its group



14. Compare the energy of orbitals for multielectronic species :

(A) $n = 3, \ell = 0, m = 0$

(B) $n = 3, \ell = 1, m = -1$

(C) $n = 4, \ell = 2, m = 0$

(D) $n = 3, \ell = 2, m = 1$

(1) $A > B > C > D$ (2) $A > B > D > C$

(3) $C > B > D > A$ (4) $C > D > B > A$

Ans. (4)

Sol. Energy of orbitals can be compared by $(n + \ell)$ rule

A : $n = 3, \ell = 0 \Rightarrow (n + \ell) = 3$

B : $n = 3, \ell = 1 \Rightarrow (n + \ell) = 4$

C : $n = 4, \ell = 2 \Rightarrow (n + \ell) = 6$

D : $n = 3, \ell = 2 \Rightarrow (n + \ell) = 5$

Energy order : $C > D > B > A$

15. **Statement-I** : The electronegativity order in F, O, N is $F > O > N$.

Statement-II : Oxidation state of "O" in OF_2 is +2 and in Na_2O is -2.

Choose the correct option.

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

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

(3) Statement-I is correct & statement-II is incorrect.

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

Ans. (1)

Sol. Element Electronegativity

F 4.0

O 3.5

N 3.0

OF_2 has "O" in +2 oxidation state

Na_2O has "O" in -2 oxidation state.

16. Select the correct statements :

(a) Glucose has 2 anomeric forms.

(b) Both forms have difference in configuration at C_1 carbon.

(c) α -form has more melting point than β -form

(d) Specific rotation of α -form is $+19^\circ$ and β -form has $+112^\circ$.

(e) α -form crystallises at 307° and β -form crystallise at 371° .

(1) b, c is correct

(2) a, b and e is correct

(3) a, b is correct

(4) a, b, d, e is correct

Ans. (4)

Sol. Theory based

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17. 0.4 gm organic compound is subjected to estimation of sulphur by carius method. In the process 0.6 gm of BaSO_4 was formed. Find % of sulphur (nearest integer)

Ans. (21)

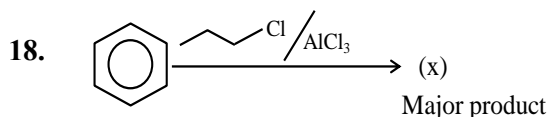
Sol. Moles of BaSO_4 formed = $\frac{0.6}{233}$ = moles of S

$$N_s = \frac{0.6}{233}$$

$$W_s = \frac{0.6}{233} \times 32$$

$$\% \text{ of S} = \frac{0.6 \times 32}{233} \times 100$$

$$= 20.6$$

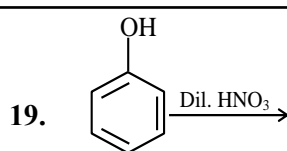
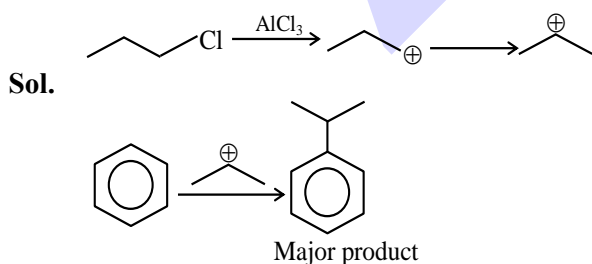


Mark correct statement(s) for above given reaction.

- (a) One of the intermediate is form due to rearrangement.
- (b) Major product is n-propylbenzene.
- (c) Polysubstitution of substrate is also possible.
- (d) Electron releasing group decreases rate of reaction.

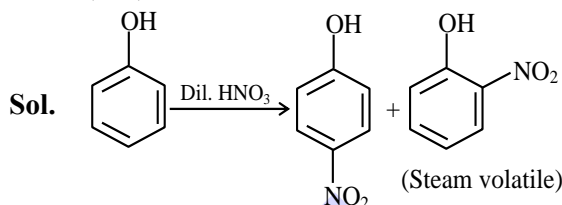
- (1) b and d are correct
- (2) a and c are correct
- (3) b and c are correct
- (4) a and d are correct.

Ans. (2)



% increase in oxygen in steam volatile product with respect to phenol is _____ $10^{-1}\%$.

Ans. (175)



$$\% \text{ oxygen in phenol} = \frac{16}{94} \times 100 = 17.02\%$$

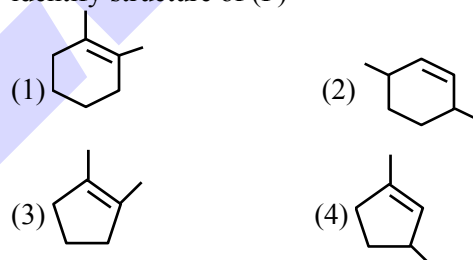
% oxygen in o-Nitrophenol ($\text{C}_6\text{H}_5\text{NO}_3$)
Molecular mass = $\text{C}_6\text{H}_5\text{NO}_3 = 139 \text{ g/m}$

$$= \frac{48}{139} \times 100 = 34.53\%$$

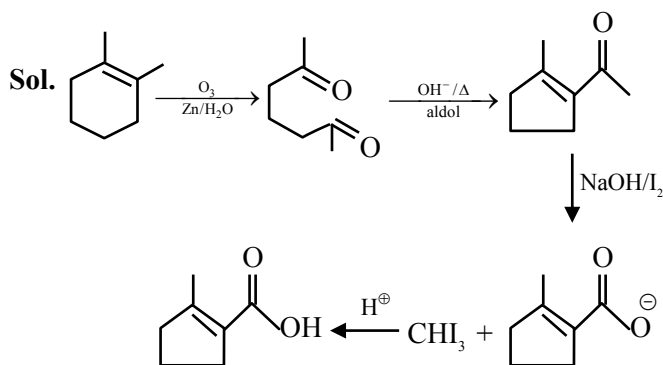
$$\% \text{ increase} = (34.53 - 17.02) = 17.5$$

$$17.5 \times 10^{-1} = 175 \text{ Answer}$$

20. Hydrocarbon (P) on reductive ozonolysis gives product which gives +ve iodoform test and on acidification it gives product given below, then identify structure of (P)



Ans. (1)

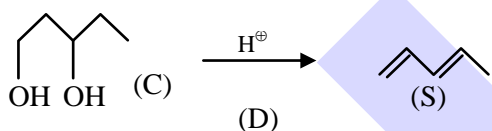
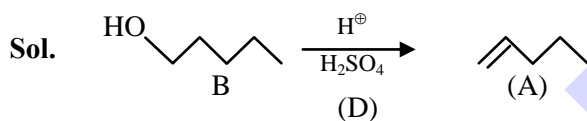


21. CH3CH=CHCH2CH3 (A) is formed when CH3CH2CH2CH2OH (B) reacts with reagent (R).

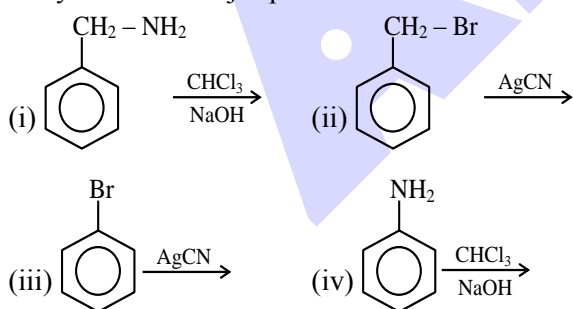
When CH3CH(OH)CH2CH2CH3 (C) reacts with (R) the formed product will be (S).

- D
- (1) PCC CH3CH=CHCH2CH3 (S)
- (2) PCC CH3CH=CHCH=CH2
- (3) conc H_2SO_4/H_3PO_4 CH3CH=CHCH=CH2
- (4) conc H_2SO_4 CH3CH=CHCH2CH3

Ans. (3)

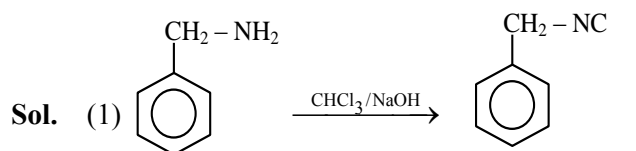


22. Which amongs the following will give benzyl isocyanide as a major product.

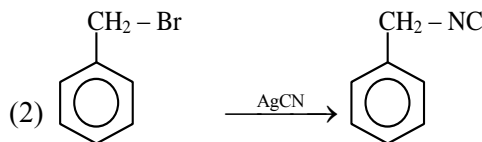


- (1) i & ii
(2) ii & iii
(3) I & iii
(4) ii & iv

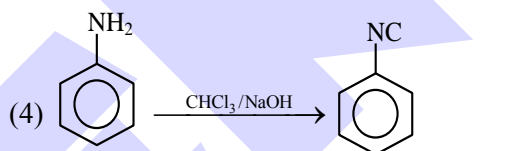
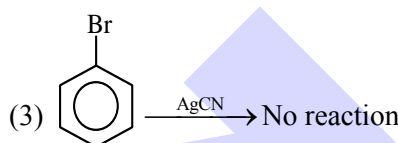
Ans. (1)



Benzyl isocyanide



Benzyl isocyanide



Phenyl isocyanide

23. Statement-1 : $\text{C(CH}_3)_3^- < \text{CH}_2^{\ominus} < \text{CH}_3\text{-CH}_2^{\ominus} < \text{CH}_3^{\ominus}$

Stability is in increasing order of carbanion.

Statement-2 : Allylic and benzylic carbanion stability is based on inductive effect and not a resonance effect.

- (1) Both Statement I and Statement II are correct
(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 incorrect

Ans. (2)

Sol. Allylic and benzylic carbanion are stabilized by resonance.



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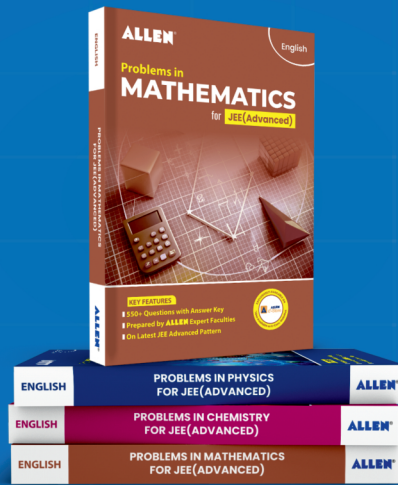
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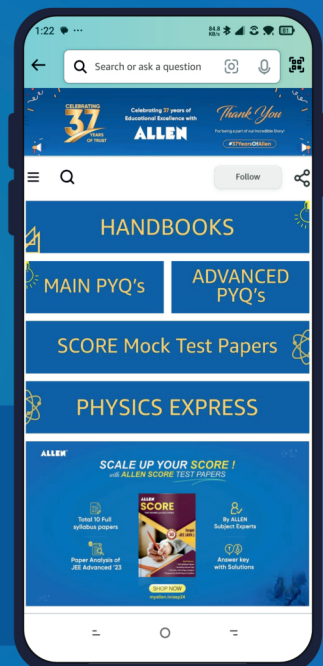
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