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JEE (MAIN) 2026

MEMORY BASED QUESTIONS & TEXT SOLUTION

SHIFT-1

DATE & DAY: 05th April 2026 & Sunday

PAPER-1

Duration: 3 Hrs.

Time: 09:00 – 12:00 IST

SUBJECT: CHEMISTRY

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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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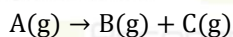
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PART : CHEMISTRY

1. For a first order reaction :



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)

Sol. $A \rightarrow B + C$

$$t = 0 \quad P_0 \quad - \quad -$$

$$t = t \quad P_0 - x \quad x \quad x$$

$$\text{As given } (P_0 - x) + x + x = P_t$$

$$x = (P_t - P_0)$$

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

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

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

$$(1) 2.16 \text{ g}$$

$$(2) 4.32 \text{ g}$$

$$(3) 2.32 \text{ g}$$

$$(4) 1.08 \text{ g}$$

Ans. (1)

Sol. $Ag_2CO_3(s) \xrightarrow{\Delta} 2Ag(s) + CO_2(g) + \frac{1}{2}O_2(g)$

$$2.76 \text{ g}$$

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

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

$$\text{Mass of residue} = 2.16 \text{ g}$$

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. 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)

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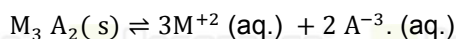
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Sol. Molarity



$$\frac{x}{y}$$

$$-\frac{3x}{y}$$

$$-\frac{2x}{y}$$

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

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

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

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

5. 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)

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

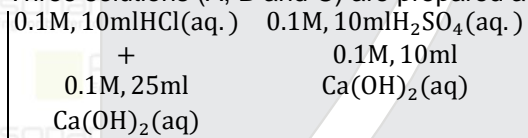
$$t_{99\%} = \frac{1}{K} \ln \left[\frac{A_0}{A_t} \right]$$

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

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

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

6. 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

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11. Consider the statements.
 (A) $N - N > P - P$ (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. (B.E.)_{P-P} > (B.E.)_{N-N}

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

Nitrogen has least density in its group

12. 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 : $C > D > B > A$

13. **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.

14. 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

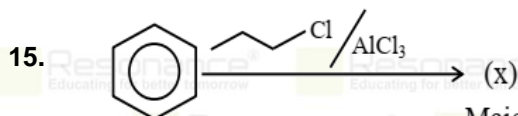
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Major product

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.

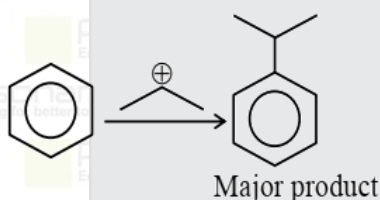
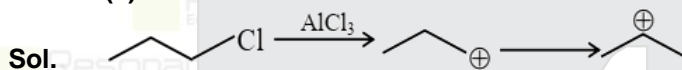
(1) b and d are correct

(2) a and c are correct

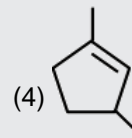
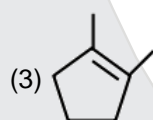
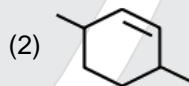
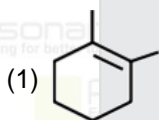
(3) b and c are correct

(4) a and d are correct.

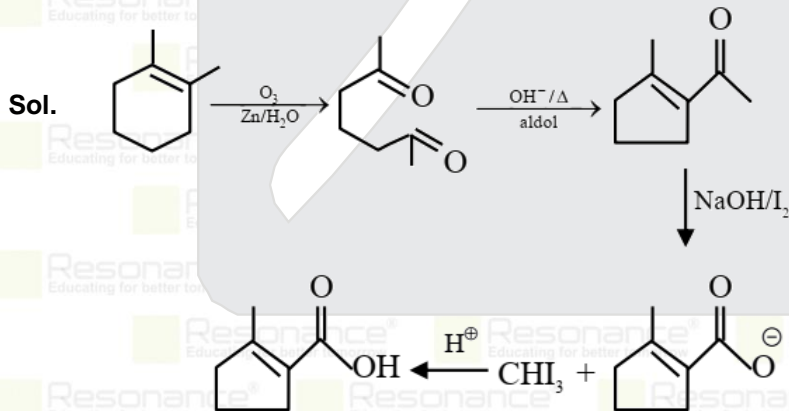
Ans. (2)





16. 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)



17.  is formed when  with reagent (R).

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

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D

(S)

(1) PCC

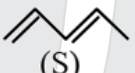
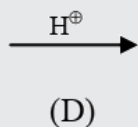
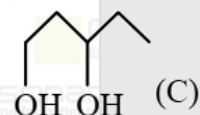
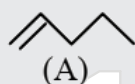
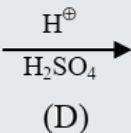
(2) PCC

(3) conc H₂SO₄/H₃PO₄

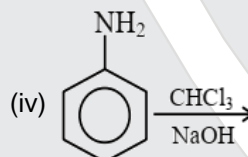
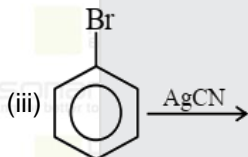
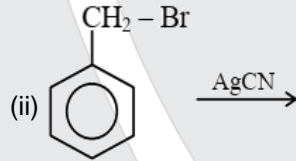
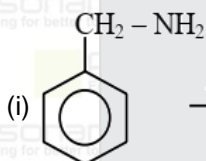
(4) conc H₂SO₄

Ans. (3)

Sol.



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



Ans. (1)

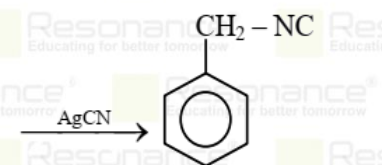
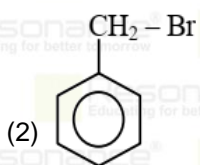
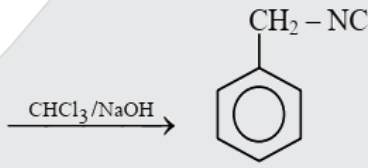
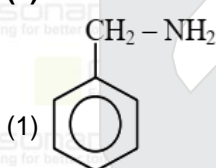
(1) i & ii

(2) ii & iii

(3) i & iii

(4) ii & iv

Sol.



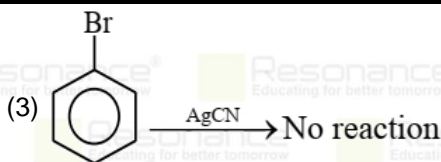
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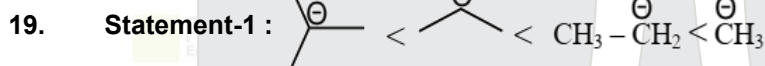
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Phenyl isocyanide



Stability is in increasing order of carbanion.

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

20. 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

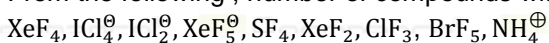
$$\log K_2 - \log K_1 = \frac{\Delta H}{2.303R} \left(\frac{1}{T_1} - \frac{1}{T_2} \right)$$

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

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

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

21. From the following, number of compounds with $sp^3 d$ hybridisation are :



Ans. (4)

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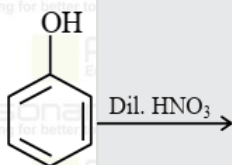
Sol. XeF_4 : $sp^3 d^2$
 ICl_4^\ominus : $sp^3 d^2$
 ICl_2^\ominus : $sp^3 d$
 XeF_5^\ominus : $sp^3 d^3$
 SF_4 : $sp^3 d$
 XeF_2 : $sp^3 d$
 ClF_3 : $sp^3 d$
 BrF_5 : $sp^3 d^2$
 NH_4^\oplus : sp^3

22. 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 $N_s = \frac{0.6}{233} W_s = \frac{0.6}{233} \times 32\% \text{ of S} = \frac{0.6 \times 32}{233 \times 4} \times 100 = 20.6$

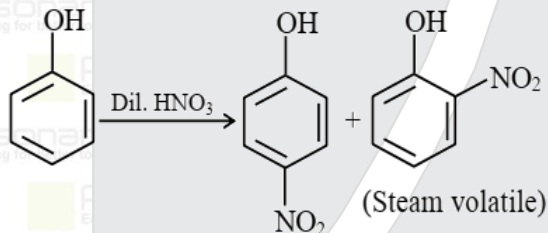
23.



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

Ans. (175)

Sol.



% 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 =
 $\text{C}_6\text{H}_5\text{NO}_3 = 139 \text{ g/m}$
 $= \frac{48}{139} \times 100 = 34.53\%$
 % increase = $(34.53 - 17.02) = 17.5$
 $17.5 \times 10^{-1} = 175$ Answer

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