

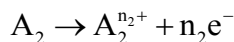
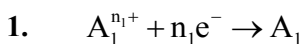
MEMORY BASED QUESTIONS JEE-MAIN EXAMINATION – APRIL 2026

(HELD ON MONDAY 06th APRIL 2026)

TIME : 3:00 PM TO 6:00 PM

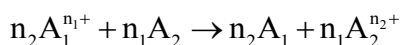
CHEMISTRY

TEST PAPER WITH SOLUTION

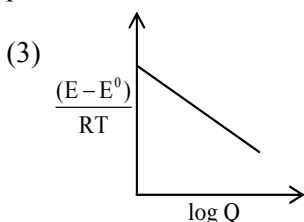


Select incorrect option :

(1) Overall cell reaction :



(2) Electrical work done by the cell = charge \times potential difference.



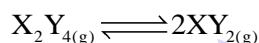
(4) In the overall cell reaction the number of electrons are not present, as electron liberated at anode, are consumed at cathode.

Ans. (3)

Sol. $\frac{E - E^0}{RT} = -\frac{2.303}{nF} \log Q$

So graph in option (3) should be straight line passing through origin.

2. For a certain decomposition



Degree of dissociation of X_2Y_4 is 75% at 1 bar and 600K. Find $|\Delta G^\circ|$ of reaction in kJ/mol^{-1}

Given $\left| \begin{array}{l} \ln 6 = 1.7918 \\ \ln 7 = 1.9459 \\ R = 8.314 \text{ Jmol}^{-1}\text{K}^{-1} \end{array} \right|$

Ans. (8)

Sol. $k_p = \frac{4P_0\alpha^2}{1-\alpha^2} = \frac{36}{7}$

$\Delta G^\circ = -RT \ln k_p$

$|\Delta G^\circ| = 8.314 \times 600 \ln \left(\frac{36}{7} \right)$

$= 8169.5 \text{ J mol}^{-1}$
 $= 8.169 \text{ kJ/mol}$

3. Total energy of Hydrogen like species is given as -54.4 eV/atom . The value of 'n' and 'Z' respectively are :

(1) 1,2

(2) 2,2

(3) 2,1

(4) 1,1

Ans. (1)

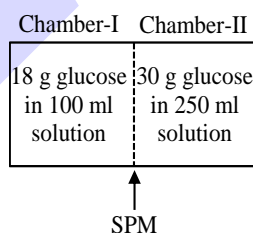
Sol. $E_n = -13.6 \times \frac{Z^2}{n^2} \text{ eV/atom}$

$-54.4 = -13.6 \left(\frac{Z^2}{n^2} \right)$

$\Rightarrow \frac{Z^2}{n^2} = 4$

$\Rightarrow Z = 2, n = 1$

4. Consider given apparatus



Statement-I : Water will move from chamber-I to chamber-II.

Statement-II : 2.5 mg of 100 ml K_2SO_4 solution has osmotic pressure 0.0107 bar at 300 K ($R = 0.083 \text{ bar-L/mole-K}$).

Choose correct statement.

(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. (3)



Sol. On side (I) $C_1 = 1$ molar
 On side (II) $C_2 = 2/3$ molar
 Hence water will flow from chamber-II to Chamber-I.

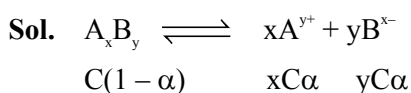
$$\text{And } \left(\pi = 3 \times \frac{2.5 \times 10^{-3} / 174}{100 / 1000} \right) \times 0.083 \times 300 = 0.0107 \text{ bar.}$$

5. For 'C' molar solution of weak electrolyte A_xB_y , dissociation constant is K, then degree of dissociation of A_xB_y at equilibrium is

$$(1) \left(\frac{K}{C^{x+y-1} x^x y^y} \right)^{\frac{1}{x+y}} \quad (2) \left(\frac{K \times C^{x+y-1}}{x^x - y^y} \right)^{\frac{1}{x+y}}$$

$$(3) \left(\frac{K \cdot x^x \cdot y^y}{C^{x+y-1}} \right)^{\frac{1}{x+y}} \quad (4) \left(\frac{K \times C^{x+y-1}}{x^x \times y^y} \right)^{x+y}$$

Ans. (1)



$$K = \frac{(xC\alpha)^x (yC\alpha)^y}{C(1 - \alpha)}$$

$$\text{As } \alpha \ll 1 \Rightarrow (1 - \alpha) \approx 1$$

$$K = x^x y^y C^{x+y-1} \alpha^{x+y}$$

$$\alpha = \left(\frac{K}{C^{x+y-1} x^x y^y} \right)^{\frac{1}{x+y}}$$

6. For a reaction rate constant (k) is given by

$$k = A e^{-\frac{2800}{T}}$$

Calculate activation energy (E_a)

- (1) 23.28 KJ/mol
- (2) 56 KJ/mol
- (3) 232.8 KJ/mol
- (4) 5600 KJ/mol

Ans. (1)

Sol. As $\frac{E_a}{R} = 2800$

$$E_a = \frac{2800 \times 8.314}{1000} \text{ KJ/mol}$$

$$E_a = 23.28 \text{ KJ/mol}$$

7.

Column-I (Isothermal process)		Column-II	
(P)	Reversible expansion	(i)	$q = 0$
(Q)	Reversible cyclic process	(ii)	$q = nRT \ln \left(\frac{V_2}{V_1} \right)$
(R)	Irreversible compression	(iii)	$W = -P_{\text{ext}} [V_2 - V_1]$
(S)	Free expansion	(iv)	$\frac{q_{\text{rev}}}{T} = 0$

Select the correct option.

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

Ans. (1)

Sol. (P) For isothermal process, $\Delta U = 0$

$$W = -nRT \ln \left(\frac{V_2}{V_1} \right) \text{ so } q = nRT \ln \left(\frac{V_2}{V_1} \right)$$

(Q) Cyclic process, change in state function (S) so change in entropy must be zero.

(R) Irreversible process $W = -P_{\text{ext}} [V_2 - V_1]$

(S) Free expansion which is isothermal must be adiabatic, so $q = 0$

8. If the Bohr's radius of H-atom is 52.9 pm and radius of H like species is 70.53 pm, then chemical species and orbit number are respectively

- (1) Li^{+2} , 3
- (2) Li^{+2} , 2
- (3) He^+ , 3
- (4) He^+ , 2

Ans. (2)

Sol. $r_{\text{species}} = a_0 \frac{n^2}{Z}$

$$70.53 = 52.9 \left(\frac{n^2}{Z} \right)$$

$$\frac{n^2}{Z} = \frac{70.53}{52.9} = 1.33 = \frac{4}{3}$$



(1) $\text{Li}^{+2}, 3 \Rightarrow \frac{n^2}{Z} = \frac{9}{3} = 3$

(2) $\text{Li}^{+2}, 2 \Rightarrow \frac{4}{3} = 1.33$

(3) $\text{He}^+, 3 \Rightarrow \frac{9}{2} = 4.5$

(4) $\text{He}^+, 2 \Rightarrow \frac{4}{2} = 2$

9. 0.2M, 500ml MnO_4^- solution is treated with 1.5M, 500ml KI solution in basic medium. The liberated I_2 required 'X'M, 300ml hypo solution. The value of 'X' is -

Ans. (1)

Sol. gm equivalent of $\text{MnO}_4^- = 0.2 \times \frac{500}{1000} \times 3 = 0.3$

gm equivalent of KI = $1.5 \times \frac{500}{1000} \times 1 = 0.75$

gm equivalent of $\text{MnO}_4^- =$ gm equivalent of hypo

$0.3 = x \times \frac{300}{1000} \times 1$

$X = 1$

10. Statement I : Of the following compounds SO_2 , SO_3 , H_2S , SF_4 ; only three compounds have complete octet.

Statement II : For the given set of compounds [SF_4 , BrF_5 , ClF_3]; [NH_3 , BrF_5 , SF_4]; [H_2O , IF_5 , XeF_4] only one set of compound has one lone pair on all central atoms.

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

Ans. (2)

Sol. SO_2 , SO_3 , H_2S , SF_4 all compounds have complete octet.

IF_5 , NH_3 , BrF_5 , SF_4 have one lone pair on central atom

ClF_3 , XeF_4 have two lone pair on central atom.

11. Consider the following ionization energy order

- (A) $\text{IE}_1 : \text{Cr} > \text{Mn}$
- (B) $\text{IE}_2 : \text{Cr} < \text{Mn}$
- (C) $\text{IE}_1 : \text{Cr} < \text{Mn}$
- (D) $\text{IE}_2 : \text{Cr} > \text{Mn}$

Correct order among the following :

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

Ans. (3)

Sol. $\text{Cr} - [\text{Ar}]3d^54s^1$
 $\text{Mn} - [\text{Ar}]3d^54s^2$
 $\text{IE}_1 - \text{Mn} > \text{Cr}$
 $\text{IE}_2 - \text{Mn} < \text{Cr}$

12. 'X' is the nitrogen containing compound which is added to freshly prepared FeSO_4 and dilute H_2SO_4 to form a brown ring complex 'Y'.

Identify X and Y.

- (1) NO ; $[\text{Fe}(\text{NO})]\text{SO}_4$
- (2) N_2O ; $[\text{Fe}(\text{N}_2\text{O})]\text{SO}_4$
- (3) NO_2 ; $[\text{Fe}(\text{NO}_2)]\text{SO}_4$
- (4) N_2O_4 ; $[\text{Fe}(\text{N}_2\text{O}_4)]\text{SO}_4$

Ans. (1)

Sol. $\text{NO} + \text{FeSO}_4 \xrightarrow{\text{dil. H}_2\text{SO}_4} [\text{Fe}^{\text{I}}(\text{NO})]\text{SO}_4$

13. Statement I : The bond angle order in OF_2 , H_2O , OCl_2 is $\text{OF}_2 < \text{H}_2\text{O} < \text{OCl}_2$

Statement II : SiF_4 , SnF_4 and PbF_4 are all ionic compounds.

Which of the following option is correct.

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

Ans. (3)

Specie Bond angle

Sol. OCl_2 111°
 H_2O 104.5°
 OF_2 103°

SiF_4 is covalent.



14. For the given coordination compounds.
- (A) $[\text{Ni}(\text{NH}_3)_6]^{2+}$ is sp^3d^2 , octahedral and paramagnetic.
- (B) $[\text{Ni}(\text{CO})_4]$ is sp^3 , tetrahedral and paramagnetic.
- (C) $[\text{Ni}(\text{CN})_4]^{2-}$ is dsp^2 , square planar and diamagnetic.
- (D) $[\text{NiCl}_4]^{2-}$ is sp^3 , tetrahedral and paramagnetic.
- The correct set of coordination compounds against the mentioned properties is

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

Ans. (3)

Sol. $[\text{Ni}(\text{CO})_4]$ is sp^3 , tetrahedral and diamagnetic

15. In a period, ionization energy of left most element is _____ and $|\Delta H_{eg}|$ value of right most element is _____. [Except noble gases]
- (1) lowest, lowest
 (2) lowest, highest
 (3) highest, highest
 (4) highest, lowest

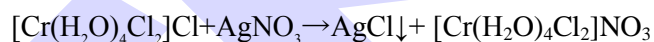
Ans. (2)

Sol. Left most element in a period will be of group 1 which will have lowest IE, while right most element will be of group 17 which will have highest $|\Delta H_{eg}|$.

16. If excess of AgNO_3 is added to 0.05M, 100ml of Tetraaquadichlorochromium(III) chloride complex aqueous solution, then the number of moles of AgCl precipitated is $x \times 10^{-3}$ moles. Find 'x'

Ans. (5)

Sol.



\Rightarrow 1 mole of complex will precipitate 1 mole of AgCl .

\Rightarrow Given moles of complex =

$$M \times V = (0.05 \times 100 \times 10^{-3}) \text{ moles}$$

\Rightarrow Moles of $\text{AgCl} = 5 \times 10^{-3}$ moles

$\Rightarrow x = 5$

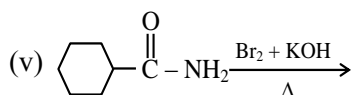
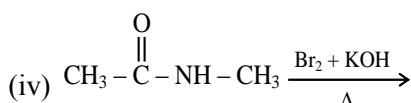
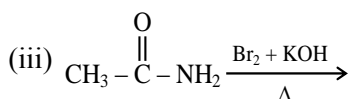
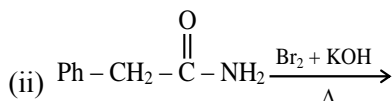
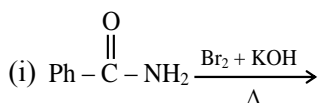
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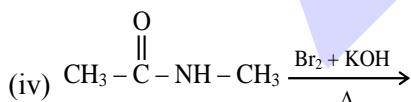
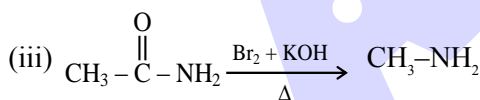
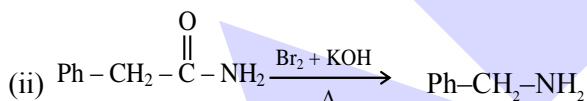
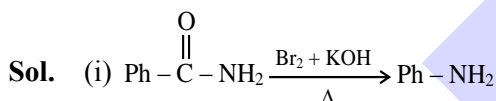


17. How many of the following reaction(s) product formed can also be prepared by Gabriel phthlimide synthesis :

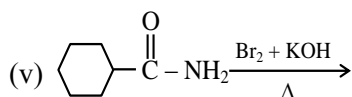


- (1) i, ii, iii
 (2) ii, iii, iv
 (3) ii, iii, v
 (4) i, iii, v

Ans. (3)

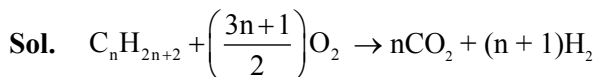


1° amine is not formed



18. 1 mol of alkane (X) for complete combustion required 8 mol of oxygen. When it is brominated in presence of sun light it gives only one product. How many primary carbons are present in alkane (X)?

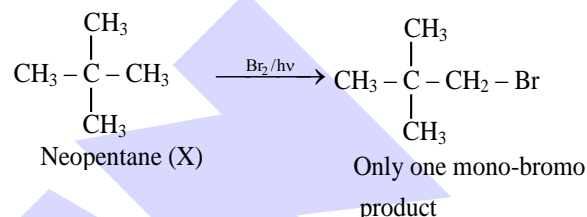
Ans. (4)



$$\frac{3n+1}{2} = 8$$

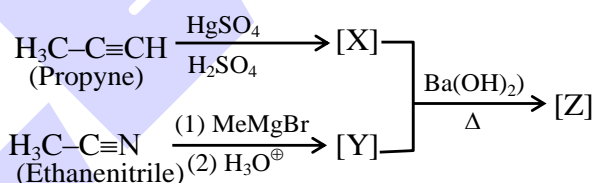
$$3n+1 = 8 \times 2$$

$$n = 5 (\because \text{C}_5\text{H}_{12})$$



Number of primary carbons = 4

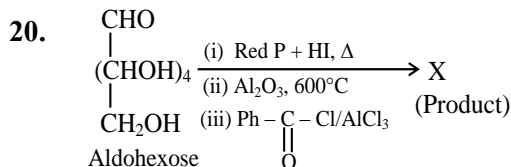
19. Give IUPAC name of the final product Z.



- (1) Mesityl oxide
 (2) 4-Methylpent-3-en-2-one
 (3) 4,4-Dimethylbut-3-en-2-one
 (4) 2-Methylpent-2-en-4-one

Ans. (2)

Sol. X and Y is propanone which undergoes aldol condensation reaction and gives 4-Methylpent-3-en-2-one (Z) as final product



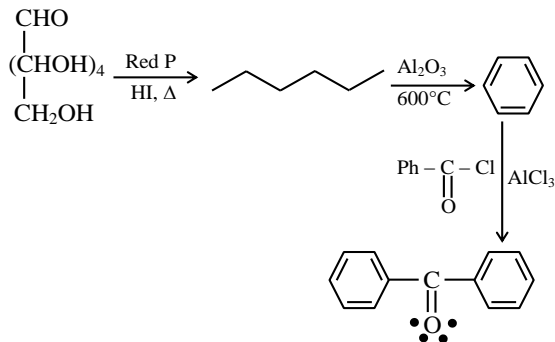
Count the total number of e⁻ present in lone pair and π bond

- (1) 12 (2) 14
 (3) 16 (4) 18



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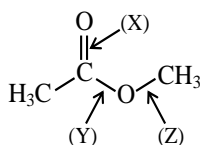
Ans. (4)



Sol.

Total number of lone pair electrons and π electrons in final product = 18

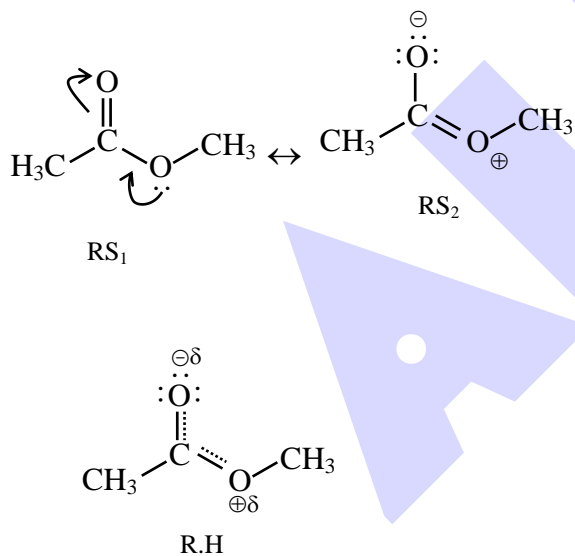
21. Compare the bond length X, Y and Z in the following compound



- (1) X = Y = Z (2) X = Y < Z
 (3) X < Y < Z (4) X < Y = Z

Ans. (3)

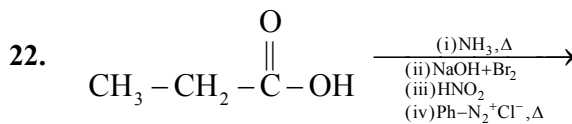
Sol.



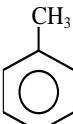

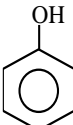
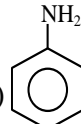
RS₁ is more stable than RS₂

∴ contribution of RS₁ is more than RS₂ in its R.H.

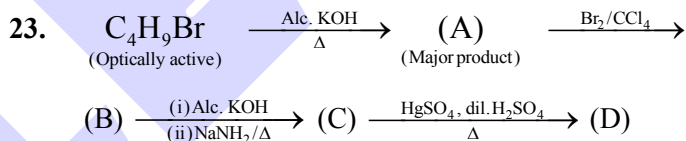
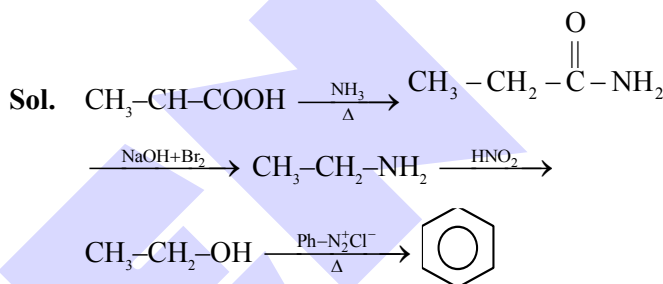
∴ Order of bond length $x < y < z$



Major product P is :

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

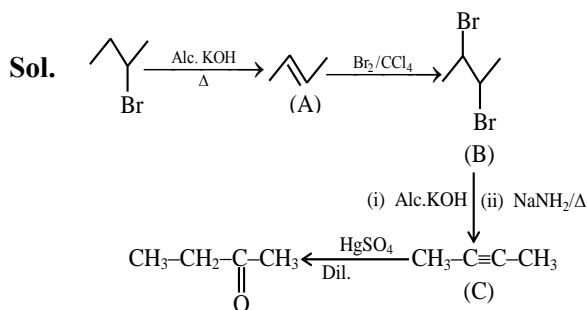
Ans. (2)



Which of the following test will give confirmation of functional group in (D)

- (1) Haloform test
 (2) Benedict test
 (3) Lucas test
 (4) Tollen's test

Ans. (1)



Final product gives +ve haloform test

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24. **Statement- I** : Mixture of Sugar and NaCl is separated by using ethanol because of difference in their solubility.

Statement-2 : Rose essence from rose petals is separated by steam distillation because of its higher volatility and insolubility in H_2O .

- (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. Theory based

25. **Statement – I** : $Ph-O-CH_2-Ph \xrightarrow{HI}$

Product is mixture of benzyl alcohol & iodobenzene.

Statement – II : $Ph-O-CH_2-Ph$, $O-CH_2$ bond cleavage takes place during reaction with HI.

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

Ans. (1)

Sol. $Ph-O-CH_2-Ph \xrightarrow{HI} \underset{\text{Phenol}}{Ph-OH} + \underset{\text{Benzyl Iodide}}{I-CH_2-Ph}$

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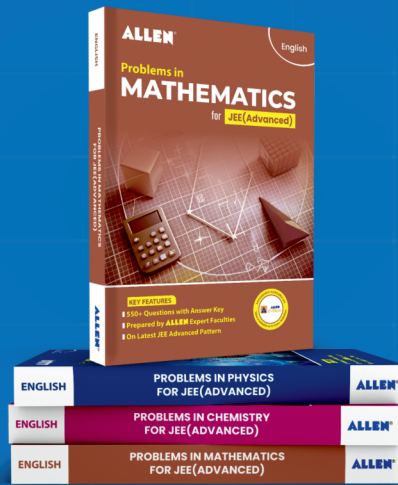
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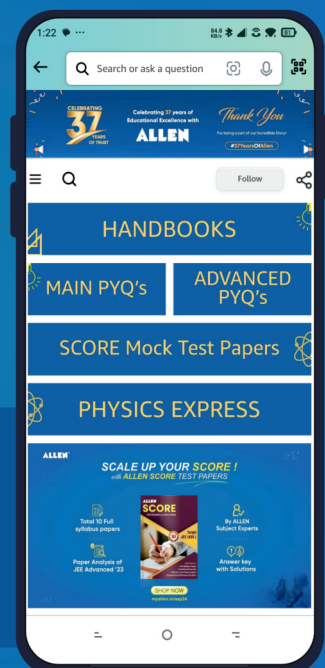
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