

FINAL NEET(UG)-2023 (MANIPUR EXAMINATION)

(Held On Tuesday 6th JUNE, 2023)

CHEMISTRY

Section-A (Chemistry)

51. **Incorrect** set of quantum numbers from the following is :

- (1) $n = 4, l = 3, m_l = -3, -2, -1, 0, +1, +2, +3, m_s = -1/2$
- (2) $n = 5, l = 2, m_l = -2, -1, +1, +2, m_s = +1/2$
- (3) $n = 4, l = 2, m_l = -2, -1, 0, +1, +2, m_s = -1/2$
- (4) $n = 5, l = 3, m_l = -3, -2, -1, 0, +1, +2, +3, m_s = +1/2$

Ans. (2)

Sol. $n = 5, l = 2, m = -2, -1, +1, +2, m_s = +\frac{1}{2}$

52. Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) :

Ionisation enthalpy increases along each series of the transition elements from left to right. However, small variations occur.

Reason (R) :

There is corresponding increase in nuclear charge which accompanies the filling of electrons in the inner d-orbitals.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

- (1) (A) is correct but (R) is not correct.
- (2) (A) is not correct but (R) is correct.
- (3) Both (A) and (R) are correct and (R) is the correct explanation of (A).
- (4) Both (A) and (R) are correct but (R) is **not** the correct explanation of (A).

Ans. (3)

Sol. Reason is the correct explanation of Assertion.

53. Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) :

Lithium and beryllium unlike their other respective group members form compounds with pronounced ionic character.

Reason (R) :

Lithium and Magnesium have similar properties due to diagonal relationship.

In the light of the above statements, choose the **correct** answer from the options given below :

- (1) (A) is true but (R) is false.
- (2) (A) is false but (R) is true.
- (3) Both (A) and (R) are true and (R) is the correct explanation of (A).
- (4) Both (A) and (R) are true but (R) is **not** the correct explanation of (A).

Ans. (2)

Sol. Li, Be forms predominately covalent compounds.

TEST PAPER WITH ANSWER

54. For a weak acid HA, the percentage of dissociation is nearly 1% at equilibrium. If the concentration of acid is 0.1 mol L^{-1} , then the **correct** option for its K_a at the same temperature is :

- (1) 1×10^{-4}
- (2) 1×10^{-6}
- (3) 1×10^{-5}
- (4) 1×10^{-3}

Ans. (3)

Sol. $K_a = C\alpha^2$

$$K_a = (0.1) \times (0.01)^2$$

$$K_a = 1 \times 10^{-5}$$

55. The density of 1 M solution of a compound 'X' is 1.25 g mL^{-1} . The **correct** option for the molality of solution is (Molar mass of compound X = 85 g) :

- (1) 0.705 m
- (2) 1.208 m
- (3) 1.165 m
- (4) 0.858 m

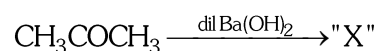
Ans. (4)

$$\text{Sol. } m = \frac{1000 \times M}{1000 \times d - MM_w}$$

$$m = \frac{1000 \times 1}{1000 \times 1.25 - 1 \times 85}$$

$$m = \frac{1000}{1165} = 0.858$$

56. Consider the given reaction :

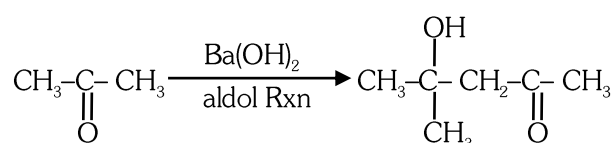


The functional groups present in compound "X" are:

- (1) ketone and double bond
- (2) double bond and aldehyde
- (3) alcohol and aldehyde
- (4) alcohol and ketone

Ans. (4)

Sol.



Functional groups present in product are alcohol and ketone.

57. The E° values for

$$\text{Al}^+/\text{Al} = +0.55 \text{ V and } \text{Ti}^+/\text{Ti} = -0.34 \text{ V}$$

$$\text{Al}^{3+}/\text{Al} = -1.66 \text{ V and } \text{Ti}^{3+}/\text{Ti} = +1.26 \text{ V}$$

Identify the incorrect statement

- (1) Al is more electropositive than Ti
- (2) Ti^{3+} is a good reducing agent than Ti^{1+}
- (3) Al^+ is unstable in solution
- (4) Ti can be easily oxidised to Ti^+ than Ti^{3+}

Ans. (2)

Sol. Ti^{3+} act as an oxidising agent not reducing agent.

58. The correct order of dipole moments for molecules

NH_3 , H_2S , CH_4 and HF , is:

- (1) $\text{CH}_4 > \text{H}_2\text{S} > \text{NH}_3 > \text{HF}$
- (2) $\text{H}_2\text{S} > \text{NH}_3 > \text{HF} > \text{CH}_4$
- (3) $\text{NH}_3 > \text{HF} > \text{CH}_4 > \text{H}_2\text{S}$
- (4) $\text{HF} > \text{NH}_3 > \text{H}_2\text{S} > \text{CH}_4$

Ans. (4)

Sol. $\text{HF} > \text{NH}_3 > \text{H}_2\text{S} > \text{CH}_4$

(Non-polar)

59. Molar conductance of an electrolyte increase with dilution according to the equation:

$$\Lambda_m = \Lambda_m^\circ - A\sqrt{c}$$

Which of the following statements are **true**?

- (A) This equation applies to both strong and weak electrolytes.
- (B) Value of the constant A depends upon the nature of the solvent.
- (C) Value of constant A is same for both BaCl_2 and MgSO_4
- (D) Value of constant A is same for both BaCl_2 and Mg(OH)_2

Choose the **most appropriate** answer from the options given below:

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

Ans. (4)

Sol. B and D statement are correct.

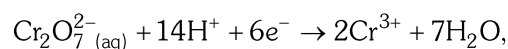
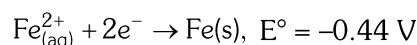
60. Cheilosis occurs due to deficiency of_____.

- (1) thiamine
- (2) nicotinamide
- (3) pyridoxamine
- (4) riboflavin

Ans. (4)

Sol. Cheilosis (Fissuring at corners of mouth and lips) occurs due to deficiency of vitamin B_2 (Riboflavin)

61. The **correct** value of cell potential in volt for the reaction that occurs when the following two half cells are connected, is



$$E^\circ = +1.33 \text{ V}$$

$$(1) +1.77 \text{ V}$$

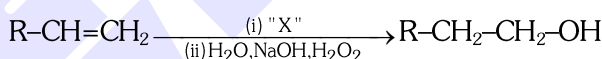
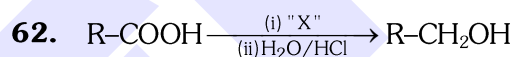
$$(2) +2.65 \text{ V}$$

$$(3) +0.01 \text{ V}$$

$$(4) +0.89 \text{ V}$$

Ans. (1)

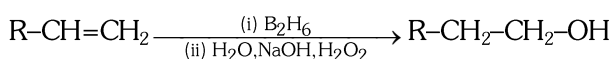
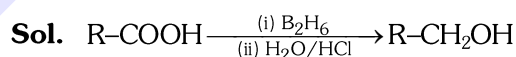
$$\begin{aligned} \text{Sol. } E_{\text{cell}}^\circ &= E_{\text{C}}^\circ - E_{\text{A}}^\circ \\ &= (1.33) - (-0.44) \\ &= +1.77 \text{ V} \end{aligned}$$



Identify 'X' in above reactions

- (1) B_2H_6
- (2) LiAlH_4
- (3) NaBH_4
- (4) H_2/Pd

Ans. (1)



63. For a reaction $3\text{A} \rightarrow 2\text{B}$

The average rate of appearance of B is given by

$$\frac{\Delta[\text{B}]}{\Delta t}. \text{ The correct relation between the average}$$

rate of appearance of B with the average rate of disappearance of A is given in option :

$$(1) \frac{-\Delta[\text{A}]}{\Delta t} \quad (2) \frac{-3\Delta[\text{A}]}{2\Delta t}$$

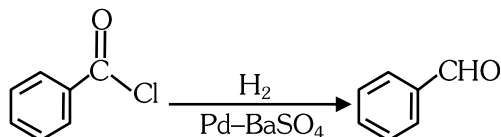
$$(3) \frac{-2\Delta[\text{A}]}{3\Delta t} \quad (4) \frac{\Delta[\text{A}]}{\Delta t}$$

Ans. (3)

Sol. $3\text{A} \rightarrow 2\text{B}$

$$\begin{aligned} r &= -\frac{1}{3} \frac{\Delta[\text{A}]}{\Delta t} = +\frac{1}{2} \frac{\Delta[\text{B}]}{\Delta t} \\ &+ \frac{\Delta[\text{B}]}{\Delta t} = -\frac{2}{3} \frac{\Delta[\text{A}]}{\Delta t} \end{aligned}$$

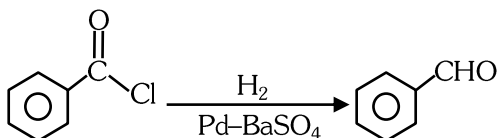
64. The following conversion is known as :



- (1) Stephen reaction
- (2) Gattermann-Koch reaction
- (3) Etard reaction
- (4) Rosenmund reaction

Ans. (4)

Sol. Rosenmund reaction



65. Which amongst the following is used in controlling depression and hypertension?

- (1) Seldane
- (2) Valium
- (3) Equanil
- (4) Prontosil

Ans. (3)

Sol. Equanil is used in controlling depression and hypertension.

66. Which one of the following represents all isoelectronic species ?

- (1) $\text{Na}^+, \text{Cl}^-, \text{O}^-, \text{NO}^+$
- (2) $\text{N}_2\text{O}, \text{N}_2\text{O}_4, \text{NO}^+, \text{NO}$
- (3) $\text{Na}^+, \text{Mg}^{2+}, \text{O}^-, \text{F}^-$
- (4) $\text{Ca}^{2+}, \text{Ar}, \text{K}^+, \text{Cl}^-$

Ans. (4)

Sol. Total numbers electrons are same
 $\text{Ca}^{+2}, \text{Ar}, \text{K}^+, \text{Cl}^- \rightarrow 20$ electrons

67. Given below are two statements :

Statement I : The value of wave function, Ψ depends upon the coordinates of the electron in the atom.

Statement II :

The probability of finding an electron at a point within an atom is proportional to the orbital wave function.

In the light of the above statements, choose the **correct** answer from the options given below :

- (1) **Statement I** is true but **Statement II** is false.
- (2) **Statement I** is false but **Statement II** is true.
- (3) Both **Statement I** and **Statement II** are true.
- (4) Both **Statement I** and **Statement II** are false.

Ans. (1)

Sol. Statement-I is true and statement-II is false.

68. The **correct** van der Waals equation for 1 mole of a real gas is :

- (1) $\left(p + \frac{a}{V^2}\right)(V - b) = RT$
- (2) $\left(p + \frac{V^2}{a}\right)(V - b) = RT$
- (3) $\left(p + \frac{an^2}{V^2}\right)(V^2 - nb) = RT$
- (4) $\left(p + \frac{an^2}{V}\right)(V - nb) = nRT$

Ans. (1)

Sol. $\left(P + \frac{a}{V^2}\right)(V - b) = RT$

69. The **correct** option in which the density of argon (Atomic mass = 40) is highest :

- (1) STP
- (2) $0^\circ\text{C}, 2 \text{ atm}$
- (3) $0^\circ\text{C}, 4 \text{ atm}$
- (4) $273^\circ\text{C}, 4 \text{ atm}$

Ans. (3)

Sol. $\rho = \frac{PM}{RT}$

For maximum density, pressure should be maximum and temperature should be minimum.

70. Which of the following is **correctly** matched ?

- (1) Basic oxides $\Rightarrow \text{In}_2\text{O}_3, \text{K}_2\text{O}, \text{SnO}_2$
- (2) Neutral oxides $\Rightarrow \text{CO}, \text{NO}_2, \text{N}_2\text{O}$
- (3) Acidic oxides $\Rightarrow \text{Mn}_2\text{O}_7, \text{SO}_2, \text{TeO}_3$
- (4) Amphoteric oxides $\Rightarrow \text{BeO}, \text{Ga}_2\text{O}_3, \text{GeO}$

Ans. (3)

Sol. $\text{Mn}_2\text{O}_7, \text{SO}_2, \text{TeO}_3$ are acidic oxides.

71. Which of the following is a positively charged sol ?

- (1) Methylene blue sol
- (2) Congo red sol
- (3) Silver sol
- (4) Sb_2S_3 sol

Ans. (1)

Sol. Methylene blue solution

72. Match **List-I** with **List-II**

List-I (Mixtures/Sample)		List-II (Technique used for purification)	
(A)	Glycerol from spent lye	(I)	Steam distillation
(B)	Chloroform + Aniline	(II)	Fractional distillation
(C)	Fractions of crude oil	(III)	Distillation under reduced pressure
(D)	Aniline + Water	(IV)	Distillation

Choose the **correct** answer from the options given below :

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

Ans. (1)

Sol. (A) Glycerol from spent lye \rightarrow Distillation under reduced pressure

(B) Chloroform + Aniline \rightarrow Distillation

(C) Fractions of crude oil \rightarrow Fractional distillation

(D) Aniline + $H_2O \rightarrow$ Steam distillation

73. Which amongst the following reactions of alkyl halides produces isonitrile as a major product ?

(A) $R-X + HCN \rightarrow$

(B) $R-X + AgCN \rightarrow$

(C) $R-X + KCN \rightarrow$

(D) $R-X + NaCN \xrightarrow[C_2H_5OH]{H_2O}$

Choose the **most appropriate** answer from the options given below :

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

Ans. (3)

Sol. [B] $R-X + Ag-C \equiv N \rightarrow R-NC$
 Isonitrile

74. The **List-I** with **List-II**

List-I (Hydride)		List-II (Type of Hydride)	
(A)	NaH	(I)	Electron precise
(B)	PH_3	(II)	Saline
(C)	GeH_4	(III)	Metallic
(D)	$LaH_{2.87}$	(IV)	Electron rich

Choose the **correct** answer from the options given below :

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

Ans. (4)

Sol. $LaH_{2.87} \rightarrow$ non-stoichiometric
 \rightarrow Metallic/ Interstitial hydride.

75. Which one of the following statements is **incorrect** related to Molecular Orbital Theory ?

- (1) The π^* antibonding molecular orbital has a node between the nuclei.
- (2) In the formation of bonding molecular orbital, the two electron waves of the bonding atoms reinforce each other.
- (3) Molecular orbitals obtained from $2P_x$ and $2P_y$ orbitals are symmetrical around the bond axis.
- (4) A π -bonding molecular orbital has larger electron density above and below the internuclear axis.

Ans. (3)

Sol. In the formation of BMO, the two electron waves of the bonding atoms reinforce each other due to constructive interference.

Molecular orbitals obtained from $2P_x$ and $2P_y$ orbitals are 'unsymmetrical' around bond axis.

76. An acidic buffer is prepared by mixing :

- (1) weak acid and its salt with strong base
 - (2) equal volumes of equimolar solutions of weak acid and weak base
 - (3) strong acid and its salt with strong base
 - (4) strong acid and its salt with weak base
- (The pK_a of acid = pK_b of the base)

Ans. (1)

Sol. Acidic buffer is prepared by mixing weak acid and its salt with strong base.

77. Reagents which can be used to convert alcohols to carboxylic acids, are

- (A) $CrO_3 - H_2SO_4$
- (B) $K_2Cr_2O_7 + H_2SO_4$
- (C) $KMnO_4 + KOH/H_3O^+$
- (D) Cu, 573 K
- (E) $CrO_3, (CH_3CO)_2O$

Choose the **most appropriate** answer from the options given below :

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

Ans. (3)

Sol. $R-CH_2-OH \xrightarrow[K_2Cr_2O_7 - H_2SO_4 \text{ or } KMnO_4 + KOH / H_3O^+]{CrO_3 - H_2SO_4 \text{ or } R-COOH}$
 [Strong oxidising agents]

78. Select the element (M) whose trihalides **cannot** be hydrolysed to produce an ion of the form $[M(H_2O)_6]^{3+}$
 (1) Ga (2) In (3) Al (4) B

Ans. (4)

Sol. Maximum covalency of boron is four.

79. The **correct** options for the rate law that corresponds to overall first order reaction is
 (1) Rate = $k[A]^0 [B]^2$
 (2) Rate = $k[A] [B]$
 (3) Rate = $k[A]^{1/2} [B]^2$
 (4) Rate = $k[A]^{-1/2} [B]^{3/2}$

Ans. (4)

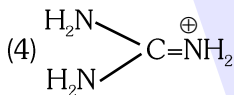
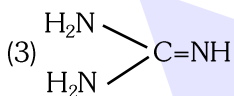
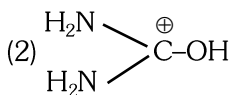
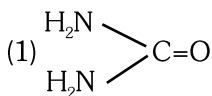
Sol. $r = k[A]^{-1/2} [B]^{3/2}$

$$\text{order} = -\frac{1}{2} + \frac{3}{2}$$

$$= \frac{2}{2}$$

$$= 1$$

80. Which amongst the following compounds/species is least basic ?



Ans. (2)

81. Which of the following forms a set of complex and a double salt, respectively ?
 (1) $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ and $\text{CuCl}_2 \cdot 4\text{NH}_3$
 (2) $\text{PtCl}_2 \cdot 2\text{NH}_3$ and $\text{PtCl}_4 \cdot 2\text{HCl}$
 (3) $\text{K}_2\text{PtCl}_6 \cdot 2\text{NH}_3$ and $\text{KAl}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$
 (4) $\text{NiCl}_2 \cdot 6\text{H}_2\text{O}$ and $\text{NiCl}_2(\text{H}_2\text{O})_4$

Ans. (3)

Sol. Complex salt is $\text{K}_2[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]$

Double salt is $\text{KAl}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$ (potash alum)

82. Given below are two statements:

Statement I :

High density polythene is formed in the presence of catalyst triethylaluminium and titanium tetrachloride.

Statement II :

High density polymers are chemically inert.

In the light of the above statements, choose the **correct** answer from the options given below :

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

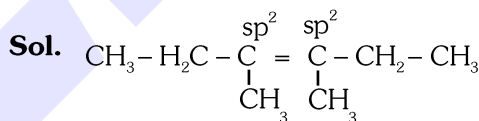
Ans. (3)

Sol. NCERT Pg.436 (Polymer)

83. Which amongst the following compounds will show geometrical isomerism ?

- (1) Pent-1-ene
 (2) 2,3-Dimethylbut-2-ene
 (3) 2-Methylprop-1-ene
 (4) 3,4-Dimethylhex-3-ene

Ans. (4)



84. Given below are two statements:

Statement I :

Hydrated chlorides and bromides of Ca, Sr and Ba on heating undergo hydrolysis.

Statement II :

Hydrated chlorides and bromides of Be and Mg on heating undergo dehydration.

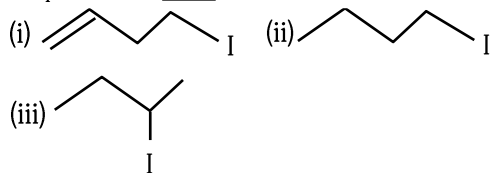
In the light of the above statements, choose the **correct** answer from the options given below :

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

Ans. (4)

Sol. Hydrated chlorides and Bromides of Ca, Sr and Ba are Ionic so undergo dehydration after heating. Hydrated chlorides and Bromides of Be and Mg are covalent so undergo hydrolysis on Heating.

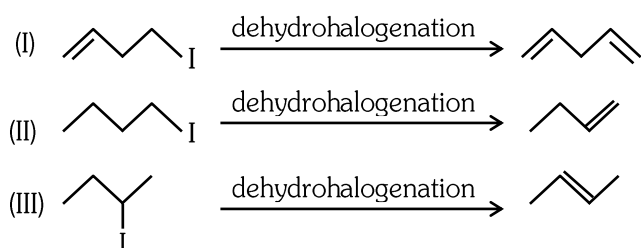
85. The correct order for the rate of α , β -dehydrohalogenation for the following compounds is ____.



- (1) (i) < (ii) < (iii) (2) (ii) < (i) < (iii)
(3) (iii) < (ii) < (i) (4) (ii) < (iii) < (i)

Ans. (4)

Sol.



Rate of Dehydrohalogenation : II < III < I

Section-B (Chemistry)

86. How many number of tetrahedral voids are formed in 5 mol of a compound having cubic close packed structure ? (Choose the **correct** option)

- (1) 1.550×10^{24} (2) 3.011×10^{25}
(3) 3.011×10^{24} (4) 6.022×10^{24}

Ans. (4)

Sol. Number of particles = $5N_A$

Number of THV = $2 \times$ number of particles, for close packing

$$\begin{aligned} &= 2 \times 5N_A \\ &= 10 N_A \\ &= 10 \times 6.023 \times 10^{23} \\ &= 6.023 \times 10^{24} \end{aligned}$$

87. Type of isomerism exhibited by compounds

$[\text{Cr}(\text{H}_2\text{O})_6]\text{Cl}_3$, $[\text{Cr}(\text{H}_2\text{O})_5\text{Cl}]\text{Cl}_2 \cdot \text{H}_2\text{O}$, $[\text{Cr}(\text{H}_2\text{O})_4\text{Cl}_2]\text{Cl} \cdot 2\text{H}_2\text{O}$ and the value of coordination number (CN) of central metal ion in all these compounds, respectively is :

- (1) Geometrical isomerism, CN = 2
(2) Optical isomerism, CN = 4
(3) Ionisation isomerism, CN = 4
(4) Solvate isomerism, CN = 6

Ans. (4)

Sol. Given complex compounds exhibit solvate isomerism having co-ordination number = 6.

88. The **correct** sequence given below containing neutral, acidic, basic and amphoteric oxide each, respectively, is

- (1) NO, ZnO, CO_2 , CaO
(2) ZnO, NO, CaO, CO_2
(3) NO, CO_2 , ZnO, CaO
(4) NO, CO_2 , CaO, ZnO

Ans. (4)

Sol. NO \rightarrow neutral CaO \rightarrow Basic
 $\text{CO}_2 \rightarrow$ Acidic ZnO \rightarrow Amphoteric

89. Read the following statements and choose the set of **correct** statements :

- (A) Chrome steel is used for cutting tools and crushing machines.
(B) The fine dust of aluminium is used in paints and lacquers.
(C) Copper is used for reduction of alcohol
(D) Zinc dust is used as a reducing agent in the manufacture of paints
(E) Iron is used for galvanising zinc

Choose the **most appropriate** answer from the options given below :

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

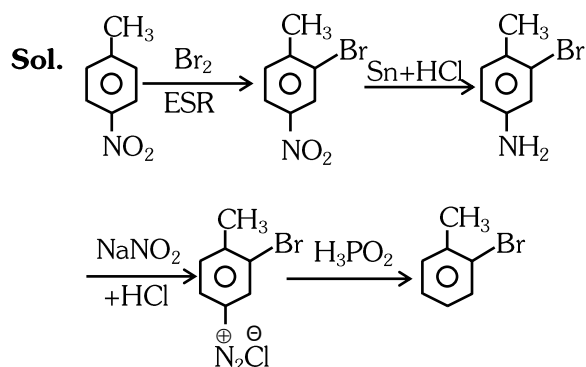
Ans. (3)

Sol. Uses in metallurgy (NCERT)

90. Choose the **correct** sequence of reagents in the conversion of 4-nitrotoluene to 2-bromotoluene.

- (1) NaNO_2/HCl ; Sn/HCl ; Br_2 ; $\text{H}_2\text{O}/\text{H}_3\text{PO}_2$
(2) Sn/HCl ; NaNO_2/HCl ; Br_2 ; $\text{H}_2\text{O}/\text{H}_3\text{PO}_2$
(3) Br_2 ; Sn/HCl ; NaNO_2/HCl ; $\text{H}_2\text{O}/\text{H}_3\text{PO}_2$
(4) Sn/HCl ; Br_2 ; NaNO_2/HCl ; $\text{H}_2\text{O}/\text{H}_3\text{PO}_2$

Ans. (3)



91. How are edge length 'a' of the unit cell and radius 'r' of the sphere related to each other in ccp structure? (Choose **correct** option for your answer)

- (1) $a = 2r$ (2) $a = r / 2\sqrt{2}$
(3) $a = 4r / \sqrt{3}$ (4) $a = 2\sqrt{2} r$

Ans. (4)

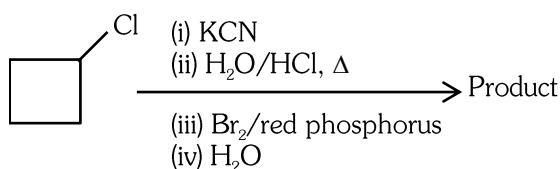
Sol. For CCP (FCC)

$$4r = \sqrt{2} a$$

$$a = \frac{4r}{\sqrt{2}}$$

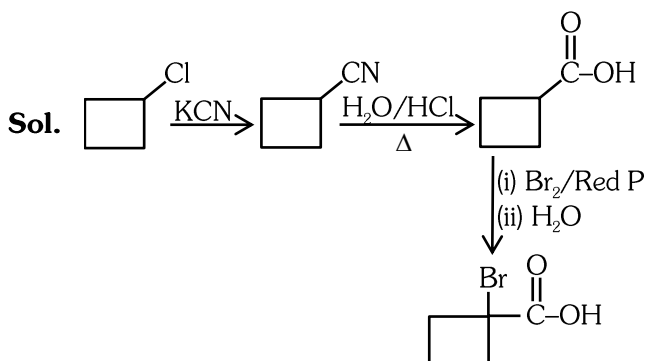
$$a = 2\sqrt{2} r$$

92. Identify the product in the following reaction



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

Ans. (2)



93. Given below are **two** statements:

Statement I :

In an organic compound, when inductive and electromeric effects operate in opposite directions, the inductive effect predominates.

Statement II :

Hyperconjugation is observed in o-xylene.

In the light of the above statements, choose the **correct** answer from the options given below :

- (1) **Statement-I** is true but **Statement-II** is false.
(2) **Statement-I** is false but **Statement-II** is true.
(3) Both **Statement-I** and **Statement-II** are true.
(4) Both **Statement-I** and **Statement-II** are false.

Ans. (2)

94. The **correct** option for a redox couple is :

- (1) Both are oxidised forms involving same element.
(2) Both are reduced forms involving same element.
(3) Both the reduced and oxidized forms involve same element.
(4) Cathode and anode together.

Ans. (3)

Sol. Redox couple is both the reduced and oxidised form involve same element.

95. Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) :- Ionisation enthalpies of early actinoids are lower than for early lanthanoids.

Reason (R) : Electrons are entering 5f orbitals in actinoids which experience greater shielding from nuclear charge.

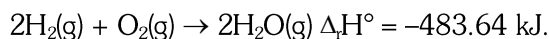
In the light of the above statements, choose the **correct** answer from the options given below :

- (1) **(A)** is true but **(R)** is false.
(2) **(A)** is false but **(R)** is true
(3) Both **(A)** and **(R)** are true and **(R)** is the correct explanation of **(A)**.
(4) Both **(A)** and **(R)** are true but **(R)** is **not** the correct explanation of **(A)**.

Ans. (3)

Sol. Reason is correct explanation the above Assertion.

96. Consider the following reaction :-

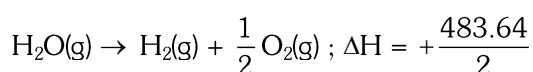


What is the enthalpy change for decomposition of one mole of water ? (Choose the **right** option).

- (1) 120.9 kJ (2) 241.82 kJ
(3) 18 kJ (4) 100 kJ

Ans. (2)

Sol. Decomposition for 1 mole of water



$$\Delta H = +241.82 \text{ kJ}$$

97. Which statement is **not** true about photochemical smog?

- (1) Photochemical smog is harmful to humans but has no effect on plants.
(2) Plants like Pinus, Juniparus can help in reducing the photochemical smog.
(3) Photochemical smog occurs in warm, dry and sunny climate.
(4) Common components of photochemical smog are ozone, nitric oxide, acrolein, formaldehyde and peroxyacetyl nitrate.

Ans. (1)

98. Which amongst the following aqueous solution of electrolytes will have minimum elevation in boiling point? Choose the **correct** option :-

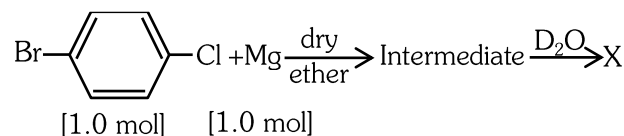
- (1) 0.05 M NaCl (2) 0.1 M KCl
(3) 0.1 M MgSO_4 (4) 1 M NaCl

Ans. (1)

Sol. $i \times M \downarrow \Rightarrow \Delta T_b \downarrow$

Electrolyte	$i \times M$
NaCl	$2 \times 0.05 = 0.1$
KCl	$2 \times 0.1 = 0.2$
MgSO_4	$2 \times 0.1 = 0.2$
NaCl	$2 \times 1 = 2$

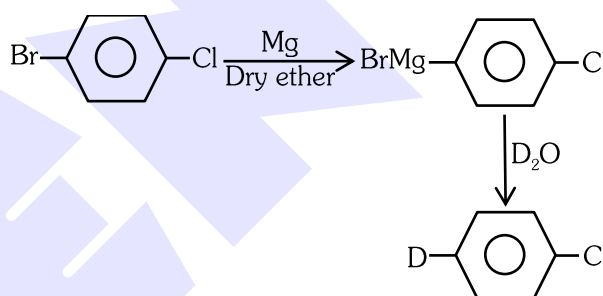
99. Identify 'X' in the following reaction.



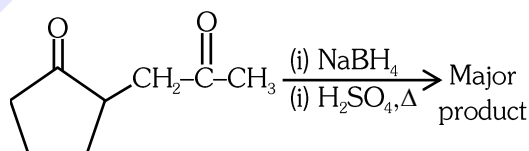
- (1) $\text{Cl}-\text{C}_6\text{H}_4-\text{D}$ (2) $\text{DO}-\text{C}_6\text{H}_4-\text{OD}$
(3) $\text{D}-\text{C}_6\text{H}_4-\text{D}$ (4) $\text{D}-\text{C}_6\text{H}_4-\text{Br}$

Ans. (1)

Sol.



100. The **major** product formed in the following conversion is ____.



- (1) $\text{Cyclopentene}-\text{CH}_2-\text{CH}=\text{CH}_2$ (2) $\text{Cyclopentene}-\text{CH}_2-\text{CH}_2-\text{CH}=\text{CH}_2$
(3) $\text{Cyclopentanone}-\text{CH}=\text{CH}_2$ (4) $\text{Cyclopentene}-\text{CH}=\text{CH}-\text{CH}_3$

Ans. (1)

