



## CHEMISTRY

### BOOKS - U-LIKE CHEMISTRY (HINGLISH)

### EXAMINATION PAPER 2020

**Section A Read The Given Passage And Answer Questions Number 1 To 5 That Follow**

1. Organic compounds containing amine as functional group are present in a vivid variety of compounds, namely amino acids, hormones, neurotransmitters, DNA, alkaloids, dyes, etc. Drugs including nicotine group in one form or another. Amines are basic because of the presence of lone pair of electrons on nitrogen. Addition of nitrogen into an organic framework leads to the formation of two families of molecules, namely amines and amides. As chemistry students, we must appreciate the

versatility of nitrogen.

What are amino acids ?

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2. Organic compounds containing amine as functional group are present in a vivid variety of compounds, namely amino acids, hormones, neurotransmitters, DNA, alkaloids, dyes, etc. Drugs including nicotine group in one form or another. Amines are basic because of the presence of lone pair of electrons on nitrogen. Addition of nitrogen into an organic framework leads to the formation of two families of molecules, namely amines and amides. As chemistry students, we must appreciate the versatility of nitrogen.

Why are amino acids amphoteric ?

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3. Organic compounds containing amine as functional group are present in a vivid variety of compounds, namely amino acids, hormones,

neurotransmitters, DNA, alkaloids, dyes, etc. Drugs including nicotine group in one form or another. Amines are basic because of the presence of lone pair of electrons on nitrogen. Addition of nitrogen into an organic framework leads to the formation of two families of molecules, namely amines and amides. As chemistry students, we must appreciate the versatility of nitrogen.

Give one point of difference between acidic and basic amino acid.



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**4.** Organic compounds containing amine as functional group are present in a vivid variety of compounds, namely amino acids, hormones, neurotransmitters, DNA, alkaloids, dyes, etc. Drugs including nicotine group in one form or another. Amines are basic because of the presence of lone pair of electrons on nitrogen. Addition of nitrogen into an organic framework leads to the formation of two families of molecules, namely amines and amides. As chemistry students, we must appreciate the versatility of nitrogen.

What are essential amino acids ?



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5. Organic compounds containing amine as functional group are present in a vivid variety of compounds, namely amino acids, hormones, neurotransmitters, DNA, alkaloids, dyes, etc. Drugs including nicotine group in one form or another. Amines are basic because of the presence of lone pair of electrons on nitrogen. Addition of nitrogen into an organic framework leads to the formation of two families of molecules, namely amines and amides. As chemistry students, we must appreciate the versatility of nitrogen.

Name the linkage formed when carboxyl end of one amino acid condenses with amino end of other amino acid.



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Section A Questions Number 6 To 10 Are One Word Answers

1. Name the process used for the benefaction of ores if the ore is soluble in some suitable solvent.

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2. Give an example of a metal which can be purified by the process of distillation.

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3. What type isomerism is shown by the complex  $[Co(NH_3)_5NO_2]Cl_2$  ?

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4. An organic compound is adsorbed on the surface of silica gel. Name the process of removing the organic compound from silica gel.

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5. Calculate the order of the reaction whose rate law expression was predicted as :

$$\text{Rate} = k[\text{NO}]^{\frac{3}{2}}[\text{O}_2]^{\frac{1}{2}}$$



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### Section A Questions Number 11 To 15 Are Multiple Choice Questions

1. 50 mL of an aqueous solution of glucose  $C_6H_{12}O_6$  (Molar mass : 180 g/mol) contains  $6.02 \times 10^{22}$  molecules. The concentration of the solution will be

- A. 0.1 M
- B. 0.2 M
- C. 1.0 M
- D. 2.0 M

**Answer: A**



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2. If the standard electrode potential of an electrode is greater than zero, then we can infer that its

- A. reduced form is more stable compared to hydrogen gas.
- B. oxidised form is more stable compared to hydrogen gas.
- C. reduced and oxidised forms are equally stable.
- D. reduced form is less stable than the hydrogen gas.

**Answer: A**



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3. Total number of unpaired electrons present in  $Co^{3+}$  (Atomic number = 27) is

A. 2

B. 7

C. 3

D. 5

**Answer: D**

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**4.** The incorrect statement about interstitial compounds is :

A. They are chemically reactive.

B. They are very hard.

C. They retain metallic conductivity.

D. They have high melting point.

**Answer: A**

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5. The correct IUPAC name of  $CH_3 - \overset{CH_3}{\underset{OH}{|C}} - CH_2CH_3$  is

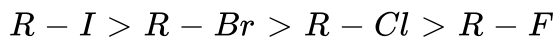
- A. tert-butyl alcohol
- B. 2,2-Dimethylpropanol
- C. 2-Methylbutan-2-ol
- D. 3-Methylbutan-3-ol

**Answer: B**

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### Section A Assertion Reason Questions 16 To 20

1. Assertion (A) : Boiling points of alkyl halides decrease in the order



Reason (R) : van der Waals forces decrease with increase in the size of halogen atom.

- A. Both Assertion (A) and Reason (R) are correct statements, and Reason (R) is the correct explanation of the Assertion (A).
- B. Both Assertion (A) and Reason (R) are correct statements, but Reason (R) is not the correct explanation of the Assertion (A).
- C. Assertion (A) is correct, but Reason (R) is incorrect statement.
- D. Assertion (A) is incorrect, but Reason (R) is correct statement

**Answer: C**



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2. Assertion (A) : Low spin tetrahedral complexes are rarely observed.

Reason (R) : The orbital splitting energies are not sufficiently large to forcing pairing

- A. Both Assertion (A) and Reason (R ) are correct statements, and Reason (R ) is the correct explanation of the Assertion (A).
- B. Both Assertion (A) and Reason (R ) are correct statements, but Reason (R ) is not the correct explanation of the Assertion (A).
- C. Assertion (A) is correct, but Reason (R ) is incorrect statement.
- D. Assertion (A) is incorrect, but Reason (R ) is correct statement

**Answer: B**



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**3. Assertion (A) :** Albumin is a globular protein.

**Reason (R) :** Polypeptide chain coils around to give straight chain

- A. Both Assertion (A) and Reason (R ) are correct statements, and Reason (R ) is the correct explanation of the Assertion (A).

- B. Both Assertion (A) and Reason (R ) are correct statements, but Reason (R ) is not the correct explanation of the Assertion (A).
- C. Assertion (A) is correct, but Reason (R ) is incorrect statement.
- D. Assertion (A) is incorrect, but Reason (R ) is correct statement

**Answer: B**

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**4. Assertion (A) :** Bakelite is a thermosetting polymer.

**Reason (R ) :** On heating, polymeric chain becomes long and straight chain.

- A. Both Assertion (A) and Reason (R ) are correct statements, and Reason (R ) is the correct explanation of the Assertion (A).
- B. Both Assertion (A) and Reason (R ) are correct statements, but Reason (R ) is not the correct explanation of the Assertion (A).
- C. Assertion (A) is correct, but Reason (R ) is incorrect statement.

D. Assertion (A) is incorrect, but Reason (R ) is correct statement

**Answer: C**

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5. Assertion (A) : o-nitrophenol is a weaker acid than p-nitrophenol.

Reason (R ) : Intramolecular hydrogen bonding makes ortho isomer weaker than para isomer.

A. Both Assertion (A) and Reason (R ) are correct statements, and

Reason (R ) is the correct explanation of the Assertion (A).

B. Both Assertion (A) and Reason (R ) are correct statements, but

Reason (R ) is not the correct explanation of the Assertion (A).

C. Assertion (A) is correct, but Reason (R ) is incorrect statement.

D. Assertion (A) is incorrect, but Reason (R ) is correct statement

**Answer: A**

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## Section B

1. Give one point of difference between the following :

Tranuilizers and Analgesics

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2. Give one point of difference between the following :

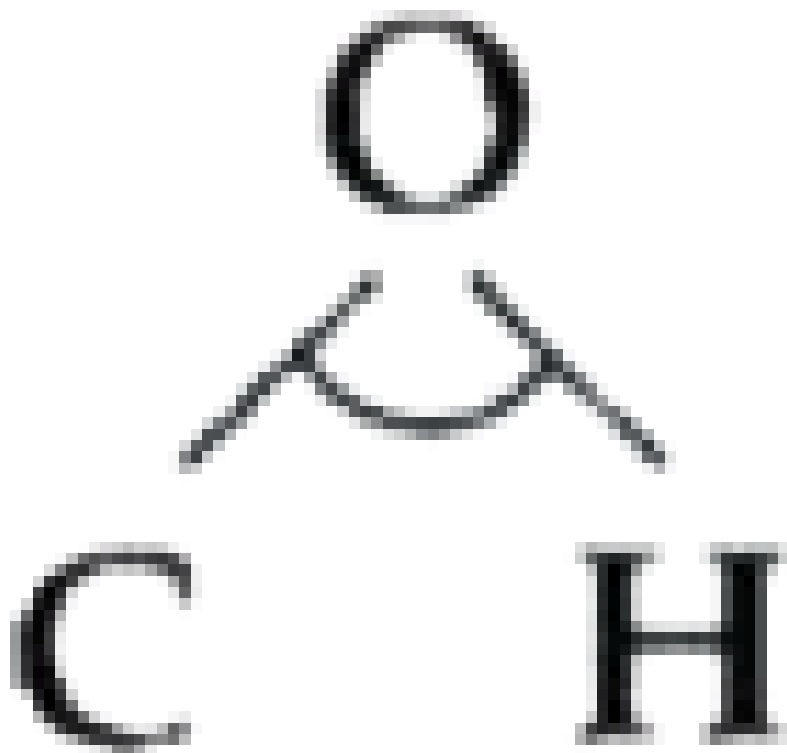
Antiseptics and Disinfectants

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3. Differentiate on the basis of chemical composition between cationic and anionic detergents Also give one example of each category.

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4. Give reasons for the following :



Bond

in

alcohol is slightly less than the tetrahedral angle.

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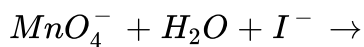
5. Give reasons for the following :

$C - OH$  bond length in  $CH_3OH$  is slightly more than  $C - OH$  bond

length in phenol.

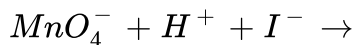
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6. Complete and balance the following chemical equations :



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7. Complete and balance the following chemical equations :



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8. Define adsorption isotherm. Give the empirical relationship between the quantity of gas adsorbed by unit mass of solid absorbent and pressure at a particular temperature.

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9. Define shape - selective catalysis. Name the process by which alcohols convert directly into gasoline and give a variety of hydrocarbons.

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10. A reaction is first order w.r.t reactant A as well as w.r.t. B. Give the rate law. Also give one point of difference between average rate and instantaneous rate.

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11. For an electrochemical cell :

$Mg(s) + Ag^+(aq) \rightarrow Ag(s) + Mg^{2+}(aq)$ , give the cell representation.

Also write the Nernst equation for the above cell at  $25^\circ C$ .

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12. Predict the state of the solute in the solution in the following situations :

When 'I' is found to be more than one.

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13. Predict the state of the solute in the solution in the following situations :

When 'I' is found to be less than one.

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14. In the given reaction

$A + 3B \rightarrow 2C$ , the rate of formation of C is  $2.5 \times 10^{-4} \text{ mol L}^{-1} \text{ s}^{-1}$ .

Calculate the

(i) rate of reaction, and

(ii) rate of disappearance of B.

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15. Write the role of the following :

(i)  $NaAlF_4$  in the extraction of Aluminium

(ii) CO in the refining of Ni.

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16. Write the chemical equations involved in the leaching of bauxite ore to prepare pure alumina.

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17. Write two differences between physisorption and chemisorption.

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18. Define the following terms with a suitable example of each :

(i) Associated colloids (ii) O/W emulsion



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19. (a) Write the IUPAC name and hybridisation of the complex  $[CoF_6]^{3-}$ .

[Given : Atomic number of Co = 27]

(b) What type of isomerism is shown by the complex  $[Co(en)_2Cl_2]^{2+}$  ?

Name the structure of an isomer of this complex which is optically active.



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20. Give reasons :

(i) Shaving soaps contain glycerol.

(ii) Antacids should not be used for longer time.



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21. Define the following terms :

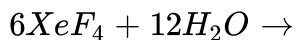
(i) Oligosaccharides

(ii) Invert sugar



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22. Write the products of the following reaction :



Is this reaction a disproportionation reaction ? Give reasons in support of your answer.



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## Section C

1. Give the structures of the monomers of the following polymers :

Teflon



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2. Give the structures of the monomers of the following polymers :

Glyptal

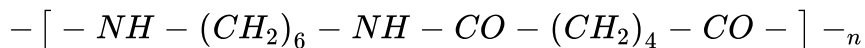
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3. Give the structures of the monomers of the following polymers :

Nylon 6

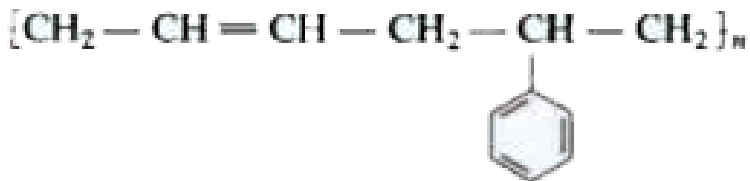
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4. Write the names of monomers of the following polymers :



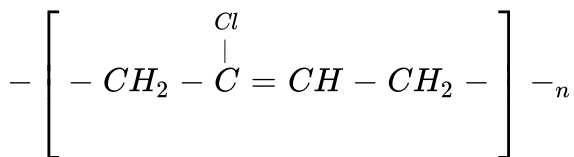
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5. Write the names of monomers of the following polymers :



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6. Write the names of monomers of the following polymers :



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7. Account for the following :

Aniline is a weaker base compared to ethanamine.

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8. Account for the following :

Aniline does not undergo Friedel - Crafts reaction.

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9. Account for the following :

Only aliphatic primary amines can be prepared by Gabriel Phthalimide synthesis.

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10. Justify and arrange the following compounds of each set in increasing order of reactivity towards the asked displacement :

1-Bromobutane, 2-Bromobutane, 2-Bromo-2-Methylpropane ( $S_N1$  reaction)

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11. Justify and arrange the following compounds of each set in increasing order of reactivity towards the asked displacement :

1-Bromobutane, 2-Bromobutane, 2-Bromo-2-Methylpropane ( $S_N2$  reaction)

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12. Give the IUPAC name and electronic configuration of central metal atom in terms of  $t_{2g}$  and  $e_g$  of  $K_4[Mn(CN)_6]$ .

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13. What is meant by 'Chelate effect' ? Give an example.

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14. Write the hybridisation and magnetic characters of the following complexes :

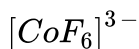


[Atomic number :  $Fe = 26$ ,  $Co = 27$ ,  $Ni = 28$ ]



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15. Write the hybridisation and magnetic characters of the following complexes :

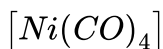


[Atomic number :  $Fe = 26$ ,  $Co = 27$ ,  $Ni = 28$ ]



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16. Write the hybridisation and magnetic characters of the following complexes :



[Atomic number :  $Fe = 26$ ,  $Co = 27$ ,  $Ni = 28$ ]



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17. Give the chemical reactions involved in the leaching of alumina from bauxite



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18. Conductivity of  $2 \times 10^{-3} M$  methanoic acid is  $8 \times 10^{-5} \text{ S cm}^{-1}$ . Calculate its molar conductivity and degree of dissociation if  $\Lambda_m^\circ$  for methanoic acid is  $404 \text{ S cm}^2 \text{ mol}^{-1}$ .



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19. An antifreeze solution is prepared by dissolving 31 g of ethylene glycol (Molar mass =  $62 \text{ g mol}^{-1}$ ) in 600 g of water. Calculate the freezing point of the solution. ( $K_f$  for water =  $1.86 \text{ K kg mol}^{-1}$ )



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20. Calculate the maximum work and  $\log K_c$  for the given reaction at 298

K :



[Given :  $E^\circ_{(Ni^{2+}/Ni)} = -0.25V$ ,  $E^\circ_{(Ag^+/Ag)} = +0.80V$ ,  $1F$

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21. A first order reaction is 40% complete in 80 minutes. Calculate the value of rate constant (k). In what time will the reaction be 90% completed ?

[Given : \_\_\_\_\_ :

$\log 2 = 0.3010$ ,  $\log 3 = 0.4771$ ,  $\log 4 = 0.6021$ ,  $\log 5 = 0.6771$ ,  $\log 6 = 0.778$

]

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**22.** Write the names and structures of the monomers in the following polymers :

(i) Buna-S

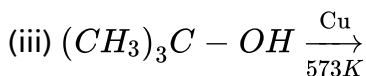
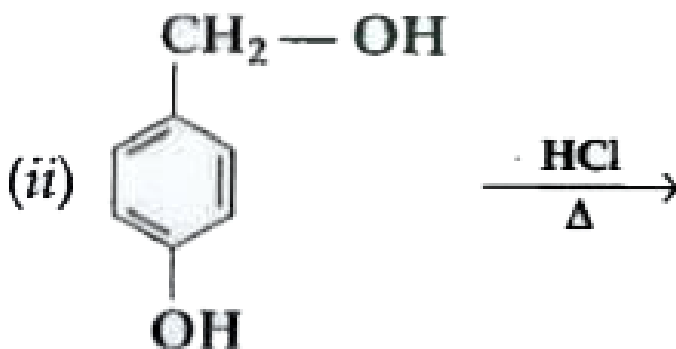
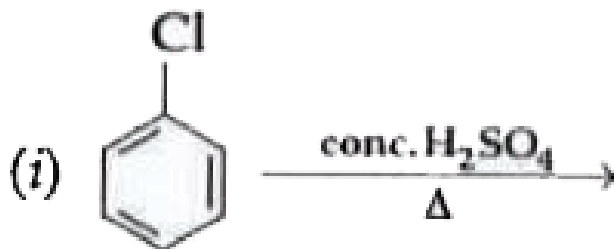
(ii) Nylon 6, 6

(iii) Bakelite



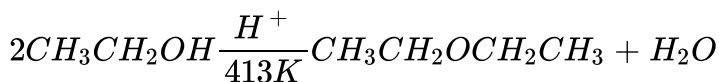
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23. Write the major product(s) of the following reactions :



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24. (a) Write the mechanism of the following reaction :



(b) Write the preparation of phenol from cumene.



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25. How can you convert the following :

- (i) Sodium phenoxide to o-hydroxybenzoic acid
- (ii) Acetone to propene
- (iii) Phenol to chlorobenzene



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26. Write the products formed when  $(CH_3)_3C - CHO$  reacts with the following reagents :

- (i)  $CH_3COCH_3$  in the presence of dilute NaOH.
- (ii) HCN.
- (iii) Conc. NaOH.



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27. Define Lyophobic and Lyophilic sol with a suitable example of each. Why is coagulation of Lyophilic sol difficult as compared to Lyophobic sol ?

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28. Define the following terms :

- (i) Shape-selective catalysis
- (ii) Kraft temperature
- (iii) Peptisation

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## Section D

1. Visha plotted a graph between concentration of R and time for a reaction  $R \rightarrow P$ . On the basis of this graph, answer the following question :

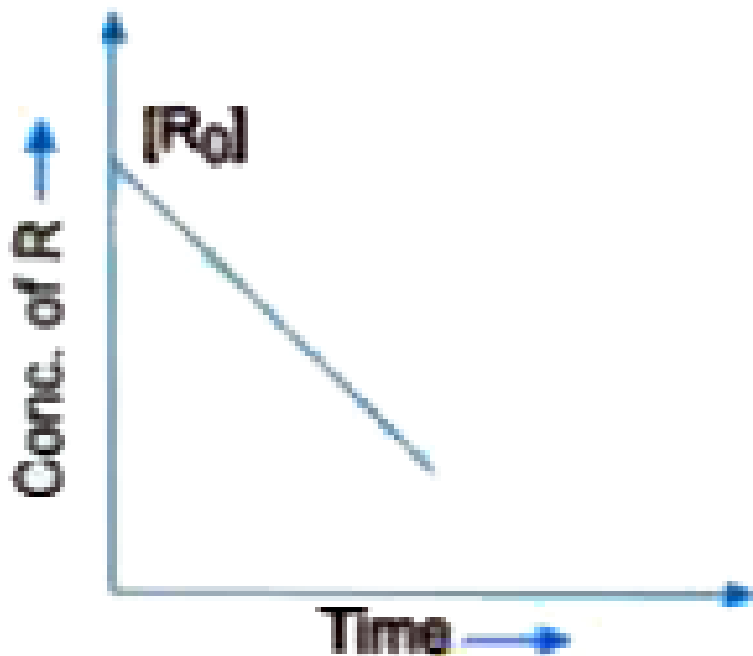


(i) Predict the order of reaction.

(ii) What does the slope of the line indicate ?

(iii) What are the units of rate constant ?

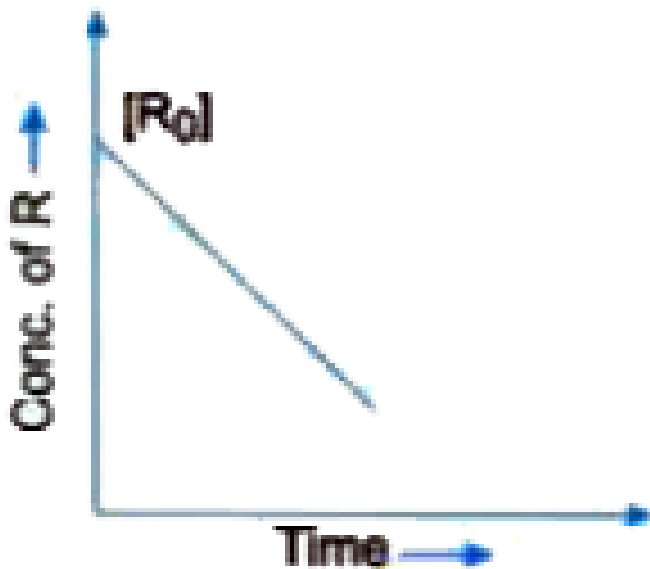
[Give :  $\log 2 = 0.3010$ ,  $\log 3 = 0.4771$ ,  $\log 4 = 0.6021$ ]



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2. A first order reaction takes 25 minutes for 25% decomposition.

Calculate  $t_{1/2}$ .



[Give :  $\log 2 = 0.3010$ ,  $\log 3 = 0.4771$ ,  $\log 4 = 0.6021$ ]

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3. The rate constant for a first order reaction is  $60 \text{ s}^{-1}$ . How much time will it take to reduce the initial concentration of the reactant to its  $\frac{1}{16}$  th value ?

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4. Write two factors that affect the rate of a chemical reaction.

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5. Write two conditions for the collisions to be effective collisions.

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6. An amorphous solid 'A' which has a crown shaped structure, burns in air to form a gas 'B' which turns lime water milky. 'B' is also produced by roasting of sulphide ores. 'B' undergoes oxidation in the presence of  $V_2O_5$  to give 'C' and to carry out this oxidation low temperature and high pressure is mandatory to get a good yield of 'C'. 'C' is then absorbed in  $H_2SO_4$  to give 'D'. 'D' is then diluted to give a very important. 'E' in concentrated form, when combined with Cu metal, gives compound 'F'.

From this description

Elucidate the structure of 'A' to 'F'.

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7. An amorphous solid 'A' which has a crown shaped structure, burns in air to form a gas 'B' which turns lime water milky. 'B' is also produced by roasting of sulphide ores. 'B' undergoes oxidation in the presence of  $V_2O_5$  to give 'C' and to carry out this oxidation low temperature and high pressure is mandatory to get a good yield of 'C'. 'C' is then absorbed in  $H_2SO_4$  to give 'D'. 'D' is then diluted to give a very important. 'E' in concentrated form, when combined with Cu metal, gives compound 'F'.

From this description

Give a balanced chemical equation for the conversion of 'E' to 'F'.

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8. An amorphous solid 'A' which has a crown shaped structure, burns in air to form a gas 'B' which turns lime water milky. 'B' is also produced by roasting of sulphide ores. 'B' undergoes oxidation in the presence of  $V_2O_5$  to give 'C' and to carry out this oxidation low temperature and high pressure is mandatory to get a good yield of 'C'. 'C' is then absorbed in

$H_2SO_4$  to give 'D'. 'D' is then diluted to give a very important. 'E' in concentrated form, when combined with Cu metal, gives compound 'F'.

From this description

Give two important functions of 'E' in the chemical industry.

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9. Give reasons for the following observations :

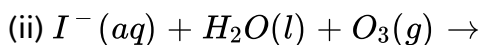
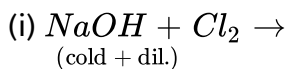
(i) Halogens are strong oxidising agents.

(ii) Noble gases have very low boiling points.

(iii) O and Cl have nearly same electronegativity, yet oxygen forms H bond while Cl doesn't.

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10. Complete and balance the following chemical equations :





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11. An organic compound 'A' having molecular formula  $C_5H_{10}O$  gives negative Tollens' test forms n-pentane on Clemmensen reduction but doesn't give iodoform test. Identify 'A' and give all the reactions involved.



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12. Carry out the following conversions :

- (i) Propanoic acid to 2-Bromopropanoic acid.
- (ii) Benzoyl chloride to benzaldehyde.



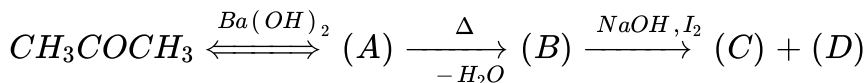
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13. How will you distinguish between benzaldehyde and acetadehyde ?



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14. Complete the following sequence of reactions :



(i) Identify (A) to (D).

(ii) Give the IUPAC name of (A).

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15. How can you distinguish between :

(i) Ethanol and Propanone, and

(ii) Benzoic acid and Phenol ?

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16. (a) Give reasons :

(i) Helium does not form compounds like Xenon.

(ii)  $HClO_4$  is a stronger acid than  $HOCl$ .

(iii)  $PCl_5$  acts as an oxidising agent.

(b) Write one reaction as an example of each, to show that conc.  $H_2SO_4$

acts as

- (i) an oxidising agent, and
- (ii) a dehydrating agent.

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17. (a) Account for the following :

- (i) Hydration enthalpy of  $F^-$  ion is more than  $Cl^-$  ion.
  - (ii)  $SO_2$  is a reducing agent, whereas  $TeO_2$  is an oxidising agent in group-16 oxides.
- (b) Write the reaction of  $F_2$  with water. Why does  $I_2$  not react with water ?
- (c) Draw the structure of  $XeF_2$ .

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18. (a) Give reasons :

- (i) Although  $-NH_2$  group is o/p directing in electrophilic substitution reactions, yet aniline, on nitration gives good yield of m-nitroaniline.



(ii)  $(CH_3)_2NH$  is more basic than  $(CH_3)_3N$  in an aqueous solution.

(iii) Ammonolysis of alkyl halides is not a good method to prepare pure primary amines.

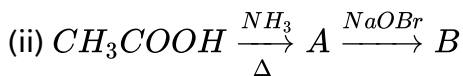
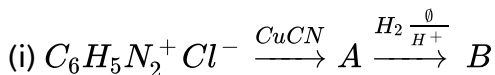
(b) Distinguish between the following :

(i)  $CH_3CH_2NH_2$  and  $(CH_3CH_2)_2NH$

(ii) Aniline and  $CH_3NH_2$

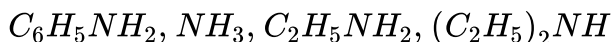
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19. (a) Write the structures of A and B in the following reactions :



(b) Write the chemical reaction of methyl amine with benzoyl chloride and write the IUPAC name of the product obtained.

(c) Arrange the following in the increasing order of their  $pK_b$  values :



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20. (a) A solution contains 5.85 g NaCl (Molar mass =  $58.5 \text{ g mol}^{-1}$ ) per litre of solution. It has an osmotic pressure of 4.75 atm at  $27^\circ \text{C}$ . Calculate the degree of dissociation of NaCl in this solution.

[Given :  $R = 0.082 \text{ L atm K}^{-1} \text{ mol}^{-1}$ ]

(b) State Henry's law. Why is air diluted with helium in the tanks used by scuba divers ?

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21. (a) When 19.5 g of  $F - CH_2 - COOH$  (Molar mass =  $78 \text{ g mol}^{-1}$ ) is dissolved in 500 g of water, the depression in freezing point is observed to be  $1^\circ \text{C}$ . Calculate the degree of dissociation of  $F - CH_2 - COOH$ .

[Given :  $K_f$  for water =  $1.86 \text{ K kg mol}^{-1}$ ]

(b) Give reasons :

(i) 0.1 M KCl has higher boiling point than 0.1 M Glucose.

(ii) Meat is preserved for a longer time by salting.

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1. Read the given passage and answer the questions number 1 to 5 that follow :

The d-block of the periodic table contains the elements of the groups 3 - 12 and are known as transition elements. In general, the electronic configuration of these elements is  $(n - 1) d^{1-10} ns^{1-2}$ . The d-orbitals of the penultimate energy level in their atoms receive electrons giving rise to the three rows of the transition metals i.e., 3d, 4d and 5d series. However, Zn, Cd and Hg are not regarded as transition elements. Transition elements exhibit certain characteristic properties like variable oxidation states, complex formation, formation of coloured ions and alloys, catalytic activity, etc. Transition metals are hard (except Zn, Cd and Hg) and have a high melting point.

Why are Zn, Cd and Hg non-transition elements ?



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2. Read the given passage and answer the questions number 1 to 5 that follow :

The d-block of the periodic table contains the elements of the groups 3 - 12 and are known as transition elements. In general, the electronic configuration of these elements is  $(n - 1) d^{1-10} ns^{1-2}$ . The d-orbitals of the penultimate energy level in their atoms receive electrons giving rise to the three rows of the transition metals i.e., 3d, 4d and 5d series. However, Zn, Cd and Hg are not regarded as transition elements. Transition elements exhibit certain characteristic properties like variable oxidation states, complex formation, formation of coloured ions and alloys, catalytic activity, etc. Transition metals are hard (except Zn, Cd and Hg) and have a high melting point.

Which transition metal of 3d series does not show variable oxidation states ?



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3. Read the given passage and answer the questions number 1 to 5 that follow :

The d-block of the periodic table contains the elements of the groups 3 - 12 and are known as transition elements. In general, the electronic configuration of these elements is  $(n - 1) d^{1-10} ns^{1-2}$ . The d-orbitals of the penultimate energy level in their atoms receive electrons giving rise to the three rows of the transition metals i.e., 3d, 4d and 5d series. However, Zn Cd and Hg are not regarded as transition elements. Transition elements exhibit certain characteristic properties like variable oxidation states, complex formation, formation of coloured ions and alloys, catalytic activity, etc. Transition metals are hard (except Zn, Cd and Hg) and have a high melting point.

Why do transition metals and their compounds show catalytic activity ?



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4. Read the given passage and answer the questions number 1 to 5 that follow :

The d-block of the periodic table contains the elements of the groups 3 - 12 and are known as transition elements. In general, the electronic configuration of these elements is  $(n - 1) d^{1-10} ns^{1-2}$ . The d-orbitals of the penultimate energy level in their atoms receive electrons giving rise to the three rows of the transition metals i.e., 3d, 4d and 5d series. However, Zn Cd and Hg are not regarded as transition elements. Transition elements exhibit certain characteristic properties like variable oxidation states, complex formation, formation of coloured ions and alloys, catalytic activity, etc. Transition metals are hard (except Zn, Cd and Hg) and have a high melting point.

Why are melting points of transition metals high ?



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5. Read the given passage and answer the questions number 1 to 5 that follow :

The d-block of the periodic table contains the elements of the groups 3 - 12 and are known as transition elements. In general, the electronic configuration of these elements is  $(n - 1) d^{1-10} ns^{1-2}$ . The d-orbitals of

the penultimate energy level in their atoms receive electrons giving rise to the three rows of the transition metals i.e., 3d, 4d and 5d series. However, Zn Cd and Hg are not regarded as transition elements. Transition elements exhibit certain characteristic properties like variable oxidation states, complex formation, formation of coloured ions and alloys, catalytic activity, etc. Transition metals are hard (except Zn, Cd and Hg) and have a high melting point.

Why is  $Cu^{2+}$  ion coloured while  $Zn^{2+}$  ion is colourless in aqueous solution ?



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6. Name the cell which was used in the Apollo Space Programme.



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7. How many coulombs are required for the oxidation of 1 mol of  $H_2O$  to  $O_2$  ?



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8. Write the slope value obtained in the plot of  $\ln[R]$  vs time for a first order reaction.

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9. Name the disaccharide which on hydrolysis gives two molecules of glucose.

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10. Name the class of the synthetic detergent which is used in toothpaste.

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11. Which of the following is refined by the zone refining process ?



A. Cu

B. Zn

C. Ge

D. Sn

**Answer: C**

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**12. Racemisation occurs in**

A.  $S_N2$  reaction.

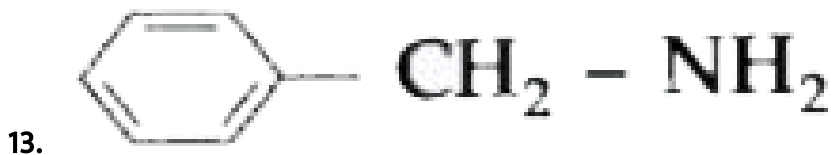
B.  $S_N1$  reaction.

C. Neither  $S_N2$  nor  $S_N1$  reactions.

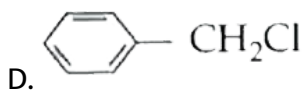
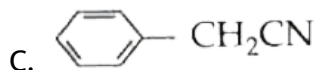
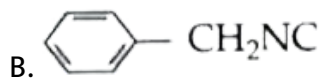
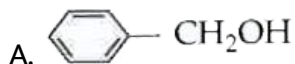
D.  $S_N2$  reaction as well as  $S_N1$  reaction.

**Answer: B**

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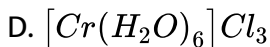
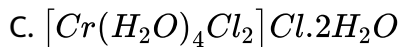
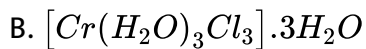
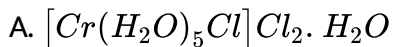
on heating with  $CHCl_3$  and alcoholic KOH gives foul smell of



**Answer: C**

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14. One mole of  $CrCl_3 \cdot 6H_2O$  compound reacts with excess  $AgNO_3$  solution to yield two moles of  $AgCl$  (s). The structural formula of the compound is



**Answer: A**



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**15. Peptide linkage is present in**

A. Carbohydrates.

B. Vitamins.

C. Proteins.

D. Rubber.

**Answer: C**



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**16.** Assertion (A) : Conductivity of an electrolyte decreases with decrease in concentration.

Reason ( R ) : Number of ions per unit volume increases on dilution.

A. Both Assertion (A) and Reason ( R ) are correct statements, and

Reason ( R ) is the correct explanation of the Assertion (A).

B. Both Assertion (A) and Reason ( R ) are correct statements, but

Reason ( R ) is not the correct explanation of the Assertion (A).

C. Assertion (A) is correct, but Reason ( R ) is incorrect statement.

D. Assertion (A) is incorrect, but Reason ( R ) is correct statement.

**Answer: A**



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17. Assertion (A) : The C - O - H bond angle in alcohols is slightly less than the tetrahedral angle.

Reason ( R ) : This is due to the repulsive interaction between the two lone electron pairs on oxygen.

A. Both Assertion (A) and Reason ( R ) are correct statements, and

Reason ( R ) is the correct explanation of the Assertion (A).

B. Both Assertion (A) and Reason ( R ) are correct statements, but

Reason ( R ) is not the correct explanation of the Assertion (A).

C. Assertion (A) is correct, but Reason ( R ) is incorrect statement.

D. Assertion (A) is incorrect, but Reason ( R ) is correct statement.

**Answer: A**



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18. Assertion (A) :  $[Pt(en)_2Cl_2]^{2+}$  complex is less stable than  $[Pt(NH_3)_4Cl_2]^{2+}$  complex.

Reason ( R ) :  $[Pt(en)_2Cl_2]^{2+}$  complex shows chelate effect.

A. Both Assertion (A) and Reason ( R ) are correct statements, and

Reason ( R ) is the correct explanation of the Assertion (A).

B. Both Assertion (A) and Reason ( R ) are correct statements, but

Reason ( R ) is not the correct explanation of the Assertion (A).

C. Assertion (A) is correct, but Reason ( R ) is incorrect statement.

D. Assertion (A) is incorrect, but Reason ( R ) is correct statement.

**Answer: D**



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19. Assertion (A) : Osmotic pressure is a colligative property.

Reason ( R ) : Osmotic pressure is directly proportional to molarity.

- A. Both Assertion (A) and Reason ( R ) are correct statements, and Reason ( R ) is the correct explanation of the Assertion (A).
- B. Both Assertion (A) and Reason ( R ) are correct statements, but Reason ( R ) is not the correct explanation of the Assertion (A).
- C. Assertion (A) is correct, but Reason ( R ) is incorrect statement.
- D. Assertion (A) is incorrect, but Reason ( R ) is correct statement.

**Answer: A**

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**20.** Assertion (A) : Reactivity of ketones is more than aldehydes.

Reason ( R ) : The carbonyl carbon of ketones is less electrophilic as compared to aldehydes.

- A. Both Assertion (A) and Reason ( R ) are correct statements, and Reason ( R ) is the correct explanation of the Assertion (A).

B. Both Assertion (A) and Reason ( R ) are correct statements, but

Reason ( R ) is not the correct explanation of the Assertion (A).

C. Assertion (A) is correct, but Reason ( R ) is incorrect statement.

D. Assertion (A) is incorrect, but Reason ( R ) is correct statement.

**Answer: D**



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