

Roll No..

Total No. of Questions : 4]

[Total No. of Printed Pages : 12

12th ARF(S/Z)JD-2026

1421-A

CHEMISTRY

Time : 3 Hours]

[Maximum Marks : 70

SECTION-A

(OBJECTIVE TYPE QUESTIONS)

(10×1=10)

Choose the correct answer and write in your answer book.

- (i) The temperature at which the molarity of Pure water is equal to its molality is:

- | | |
|-----------|-----------|
| (a) 273 K | (b) 298 K |
| (c) 277 K | (d) 270 K |

Turn Over

(ii) Which of the following is not correct for an ideal solutions?

~~(a)~~ Raoult's law is obeyed for entire concentration range and temperatures.

(b) $\Delta H_{\text{mix}} = 0$

(c) $\Delta V_{\text{mix}} = 0$

(d) $\Delta S_{\text{mix}} = 0$

(iii) The electricity required in coulomb for the oxidation of 1 mol of H_2O to O_2 is:

(a) $0.93 \times 10^5 \text{C}$

(b) $1.93 \times 10^5 \text{C}$

~~(c)~~ $2.93 \times 10^5 \text{C}$

(d) $3.93 \times 10^5 \text{C}$

(iv) The Property, which is not characteristic of transition elements is:

- (a) Variable Oxidation states
- (b) Tendency to form complexes
- (c) Formation of coloured compounds
- (d) ☒ Natural radioactivity

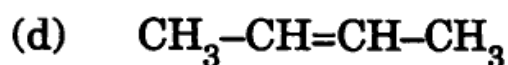
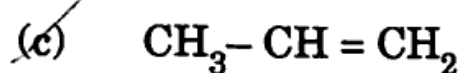
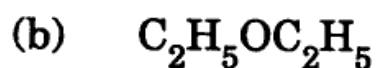
(v) An ornament of gold having 87.5% of gold, is of carat.

- (a) 15
- (b) 18
- (c) 21
- (d) 24

(vi) Ethylidene bromide is a/an:

- (a) Vic-dihalide
- (b) Gem-dihalide
- (c) Allylic halide
- (d) ☒ Vinylic halide

(vii) Ethanol undergo dehydration in the presence of H_2SO_4 at 413 K and yields as major product.



(viii) The acid present in ants is:

(a) Formic acid

(b) Acetic acid

(c) Propanoic acid

(d) Butanoic acid

(ix) Hinsberg's reagent is:

- (a) Benzene Sulphonyl chloride
- (b) Benzene Sulphonic acid
- (c) Phenyl isocyanide
- ~~(d)~~ Benzene diazonium chloride

(x) Deficiency of which vitamin causes rickets

- (a) Vitamin A
- (b) Vitamin B
- (c) Vitamin C
- (d) Vitamin D

SECTION-B

(VERY SHORT ANSWER TYPE QUESTIONS)

(9×2=18)

2. (i) Calculate the molarity of a solution containing 5g of NaOH in 500 ml solution?
- (ii) The $t_{1/2}$ of a reaction is halved as the initial concentration of the reaction is doubled. What is the order of the reaction?
- (iii) Indicate the type of isomerism exhibited by the following complex $K [Cr (H_2O)_2 (C_2O_4)_2]$ and draw the structures for these isomers.
- (iv) Give the uses and environmental effects of carbon tetrachloride.

- (v) What is Arrhenius equation? What is its importance?
- (vi) Define the following with an example.
 - (a) Coordination compound
 - (b) Ligand
- (vii) Describe Reimer-Tiemann reaction.
- (viii) Write short note on acidity of carboxylic acids.
- (ix) What is Diazotisation? Write the chemical reaction involved in it.

SECTION-C

(SHORT ANSWER TYPE QUESTIONS)

(9×3=27)

- 3. (i) What is elevation of boiling point? Show that elevation of boiling point is a colligative property?

- (ii) What is electrolysis? State and explain Faraday's first law of electrolysis.
- (iii) What is order of a reaction? Derive expression for the rate constant for the first order reaction.
- (iv) Give important uses and applications of coordination compounds.
- (v) What happens when
 - (a) Ethyl chloride is treated with aqueous KOH
 - (b) Chlorobenzene is treated with methyl chloride in the presence of anhydrous AlCl_3
 - (c) Bromobenzene is treated with methyl bromide and sodium in the presence of dry ether.

- (vi) Write the mechanism of acid dehydration of ethanol to yield ethene.
- (vii) Describe a method (Hinsberg test) for the identification of Primary, Secondary and tertiary amines. Also write chemical equation of the reactions involved.
- (viii) (a) What do you understand by the term glycosidic linkage?
- (b) Which sugar is called invert sugar? Why is it called so?
- (ix) Write the important structural and functional differences between DNA and RNA.

SECTION-D

(LONG ANSWER TYPE QUESTIONS)

(3×5=15)

4. (i) What is an electrochemical cell? Discuss the construction and working of Galvanic cell. How is Galvanic cell represented?

OR

Define corrosion. Explain electrochemical theory of rusting. Name the important factors affecting corrosion. <https://www.jkboseonline.com>

- (ii) Discuss the following properties of transition (3d) elements.

(a) Magnetic Properties

(b) Oxidation States

OR

Indicate the steps in the preparation of KMnO_4 from Pyrolusite ore. Write the ionic equations for the reaction of KMnO_4 in acidic medium with

- (a) Iron (II) solution
 - (b) Oxalate ion
- (iii) How will you prepare aldehydes from
- (a) Ozonolysis of alkenes
 - (b) Acyl chloride (Rosenmund reduction)
 - (c) Nitriles (Stephen reaction)
 - (d) Toluene (Etard reaction)

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OR

Write short notes (along with the reaction) on:

- (a) Cross aldol condensation
- (b) Cannizaro reaction
- (c) Hell-Volhard-Zelinsky reaction.
