

B-9-X

Roll No.

Total No. of Questions : 4]

[Total No. of Printed Pages : 8

12thARF(SZ)JKUT2024-25

309-X

CHEMISTRY

Time : 3 Hours]

[Maximum Marks : 70

General Instructions :

- (i) There are total four Sections in the question paper. All questions are compulsory.
- (ii) **Section-A** contains 10 Objective Type Questions (Multiple Choice Questions) of 1 mark each. $1 \times 10 = 10$ marks
- (iii) **Section-B** contains 9 Very Short Answer Type Questions of 2 marks each to be answered in 20-30 words.
 $2 \times 9 = 18$ marks
- (iv) **Section-C** contains 9 Short Answer Type Questions of 3 marks each to be answered in 100-150 words. $3 \times 9 = 27$ marks
- (v) **Section-D** contains 3 Long Answer Type Questions of 5 marks each to be answered in 150-200 words. $5 \times 3 = 15$ marks
- (vi) Use log table if necessary. Use of scientific calculators is not allowed.

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Turn Over

SECTION-A

1 each

**OBJECTIVE TYPE QUESTIONS
(MULTIPLE CHOICE QUESTIONS)****1. Select the correct one :**

(i) The molal elevation constant is the ratio of the elevation in B.P. to :

(A) Molarity

(B) Molality

☒ (C) Mole fraction of solute

(D) Mole fraction of solvent

(ii) Which of the following solutions will have highest boiling point at 1 atm pressure ?

(A) 0.1 m FeCl_3

☒ (B) 0.1 m BaCl_2

(C) 0.1 m NaCl

(D) 0.1 m Urea (NH_2CONH_2)

(iii) Nernst equations give effect of :

- (A) Temperature on EMF
- (B) Concentration on EMF
- (C) Pressure of the gas (if any) on EMF

☒ (D) All the three above

(iv) The rate constant of a reaction is $2.5 \times 10^{-2} \text{ sec}^{-1}$. The order of the reaction is :

☒ (A) One

(B) Zero

(C) Two

(D) Three

(v) S_{N}^1 reactions occur through the intermediate formations of :

☒ (A) Carbocation

(B) Carbanions

(C) Free radical

(D) None of these

(vi) On heating with Sodalime salicylic acid gives :

✓ (A) Phenol

(B) Benzoic acid

(C) Sodium salicylate

(D) Benzene

(vii) Reduction of nitroethane with LiAlH_4 gives :

(A) Ethyl hydroxylamine

(B) Ethanol

✓ (C) Ethylamine

(D) Ethanamide

(viii) A complex in which dsp^2 hybridisation takes place is :

✓ (A) Square planar

(B) Tetrahedral

(C) Triangular planar

(D) Pyramidal

(ix) Adenosine is example of a :

(A) Nucleotide

~~(B) Nucleoside~~

(C) Purine base

(D) Pyridine base

(x) Which of the following biomolecules contains a non-transition metal ion ?

(A) Haemoglobin

~~(B) Chlorophyll~~

(C) Insulin

(D) Vitamin B₁₂

SECTION-B

2 each

VERY SHORT ANSWER TYPE QUESTIONS

2. (i) Calculate the half-life of a first order reaction from their rate constants given below :

(a) 200 s^{-1}

(b) 2 min^{-1}

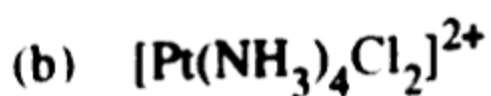
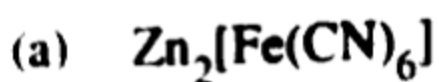
~~(iii)~~ Why does a transition series consist of 10 elements ?

~~(iii)~~ Why is an alkylamine more basic than ammonia ?

~~(iv)~~ What is Lucas reagent ?

~~(v)~~ What are essential and non-essential amino acids ?

~~(vi)~~ Write the IUPAC names of :



~~(vii)~~ Define rate of reaction and rate constant.

~~(viii)~~ Why cannot molecularity of any reaction be equal to zero ?

~~(ix)~~ Give a brief account of Wurtz reaction.

SECTION-C

3 each

SHORT ANSWER TYPE QUESTIONS

3. ~~(i)~~ What do you mean by a Nucleophilic addition reaction ? Give its mechanism.

~~(ii)~~ Define Kohlrausch's law. How can it be used to find the degree of dissociation of a weak electrolyte ?

✓(iii) Explain, why transition metal ions usually show paramagnetic behaviour ?

(iv) What happens when acidified KMnO_4 reacts with (a) H_2S
(b) Oxalic acid (c) KNO_2 ?

✓(v) Define cis and trans isomerism. Draw the cis and trans isomers of $[\text{Co}(\text{NH}_3)_4\text{Cl}_2]^+$ ion.

(vi) How will you convert ethyl bromide to :

(a) Ethoxyethane

(b) Ethane

(c) Ethanol

✓(vii) How will you distinguish between primary, secondary and tertiary alcohols by Victor Meyer's test ? Give chemical reactions.

✓(viii) What is Diazotisation ? Discuss its mechanism.

✓(ix) What are Carbohydrates ? How are they classified ?

SECTION-D

5 each

LONG ANSWER TYPE QUESTIONS

- (i) State and explain Raoult's law for (a) Volatile solute (b) non-volatile solute.

Or

What do you understand by Colligative properties of a solution ? Explain briefly osmosis and osmotic pressure.

- (ii) What is an electrochemical cell ? Describe working of Daniell cell.

Or

What is Corrosion ? Give mechanism (electrochemical phenomenon) of rusting of iron. What do you understand by cathodic and barrier protection of corrosion ?

- (iii) Describe any five general methods of preparations of carboxylic acids.

Or

Giving chemical equations write a brief account of the following :

- (a) Aldol condensation
- (b) Cannizzaro reaction
- (c) Rosenmund reduction