

**F-9-B**

Roll No. ....

Total No. of Questions : 4+28]

[Total No. of Printed Pages : 15

**XIIAP/Bi.AUTJKL24**

**1709-B**

**CHEMISTRY**

**(New/Old Course)**

**Time : 3 Hours]**

**[Maximum Marks : 70**

**NOTE** :— The questions in the question paper are based on revised and pre-revised syllabus marked as "New Course" and "Old Course" respectively and candidates are advised to appear in the relevant course meant for them. Candidates who may attempt the questions partly from "New Course" and partly from "Old Course" will not be awarded. Candidates are also advised to record "New Course" or "Old Course" as the case may be, on the front page of the answer-book.

XIIAP/Bi.AUTJKL24—1709-B (New)

**F-9-B**

Turn Over

**(New Course)**

**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. 1×10=10
- (iii) Section–B contains 9 very short answer type questions of 2 marks each to be answered in 20–30 words. 2×9=18
- (iv) Section–C contains 9 short answer type questions of 3 marks each to be answered in 100 to 150 words. 3×9=27
- (v) Section–D contains 3 long answer type questions of 5 marks each to be answered in 150–200 words. 5×3=15
- (vi) Use of log tables, if necessary, use of Scientific Calculators is not allowed.

**Section–A**

**(Objective Type/Multiple Choice Questions)**

1 each

1. Select the correct one :

- (i) The increase in the temperature of the aqueous solution will result in its :
  - (A) Molarity to increase
  - (B) Molarity to decrease
  - (C) Mole fraction to increase
  - (D) Mass percentage to increase

- (ii) Which of the following 0.1 M aqueous solutions will have the highest freezing point ?
- (A) Potassium sulphate                      (B) Sodium chloride  
(C) Urea    (D)  $\text{BaCl}_2$
- (iii) Zinc is used to protect iron from corrosion because :
- (A)  $E_{\text{oxi}}$  of Zn is less than  $E_{\text{oxi}}$  of Fe  
(B)  $E_{\text{red}}$  of Zn is less than  $E_{\text{red}}$  of Fe  
(C) Zn is cheaper than Fe  
(D) Zn is abundantly available
- (iv) The half life period is independent of initial concentration of reactants for :
- (A) First order reaction                      (B) Second order reaction  
(C) Zero order reaction                      (D) Third order reaction
- (v) Which one of the following does not show different oxidation states ?
- (A) Iron    (B) Copper  
(C) Zinc    (D) Manganese
- (vi) Methyl chloride reacts with silver acetylide to form :
- (A) Acetylene                                      (B) Ethylene  
(C) Propyne                                        (D) Propylene

(vii) Phenol is used in the manufacture of :

- (A) Bakelite                      (B) Polystyrene  
(C) PVC                                (D) Nylon

(viii) Ethylamine reacts with nitrosyl chloride to give :

- (A) Ethylchloride                  (B) Ethylalcohol  
(C) Ethylnitrite                    (D) Nitroethane

(ix) Which of the following monosaccharides is an aldopentose ?

- (A) Glucose                          (B) Fructose  
(C) Arabinose                       (D) Galactose

(x) The deficiency of vitamin C causes :

- (A) Rickets                            (B) Scurvy  
(C) Pyorrhoea                        (D) Pernicious anemia

### Section-B

(Very Short Answer Type Questions)

2 each

2. (i) The rate constant for a first order reaction is  $0.0005 \text{ min}^{-1}$ .  
Calculate its half life period.
- (ii) Write Arrhenius equation showing the effect of temperature on  
the reaction rate. What do different symbols signify ?

- (iii) Define first order reaction. What are the units of K for first order and zero order reactions ?
- (iv) Define with one example the following :
- (a) Complex ion
  - (b) Coordination compound
- (v) Write IUPAC names of :
- (a)  $[\text{Co}(\text{NH}_3)_6]^{3+}$
  - (b)  $[\text{Cu}(\text{H}_2\text{O})_6]^{2+}$
- (vi) Give the uses and environmental effects of D.D.T.
- (vii) Explain briefly the dehydration of ethylalcohol with  $\text{H}_2\text{SO}_4$  at temperature 443K and 413K.
- (viii) What are Amines ? How are they classified ?
- (ix) What are carbohydrates ? How are they, classified ?

### Section-C

(Short Answer Type Questions)

3 each

3. (i) State Kohlrausch's law of independent migration of ions. Mention one application of this law.

- (ii) What is Lanthanide contraction ? How is it caused ?
- (iii) What are transition elements ? Why are they called *d*-block elements ? Write the electronic configuration of the 1st and last member of 3*d* transition series.
- (iv) Define the following terms with examples :
- (a) Ionisation isomerism
  - (b) Bidentate ligand
- (v) How will you convert ethyl bromide into :
- (a) Ethylnitrite
  - (b) Ethylcarbylamine
  - (c) Ethene ?
- (vi) How is phenol converted into :
- (a) Salicylaldehyde
  - (b) Phenylacetate ?

- (vii) Aldehydes are more reactive than ketones. Explain. Give reasons.
- (viii) What are diazomium salts ? How benzene diazonium chloride react with KI on warming ?
- (ix) Describe the secondary structure of Proteins.

### Section-D

(Long Answer Type Questions)

5 each

4. (i) State and explain depression in freezing point. Derive the relationship between depression in freezing point and molar mass of solute. <https://www.jkboseonline.com>

*Or*

What is Van't Hoff factor ? How is it related to degree of dissociation of the electrolyte in the solution ? What is its value when solute undergoes association and dissociation ?

- (ii) State and explain Faraday's Laws of electrolysis. What is meant by electrochemical equivalent ?

*Or*

Explain the term Electrode potential and e.m.f. of a cell. Discuss Nernst equation for the cell potential.

(iii) What happens when Acetone is treated with :

- (a) Sodium bisulphite
- (b) Hydrazine
- (c) Grignard reagent
- (d) Hydroxylamine
- (e) Hydrogen cyanide ?

*Or*

Give two methods of preparation of carboxylic acids. How they react with :

- (a) NaOH
- (b)  $\text{NH}_3$
- (c)  $\text{C}_2\text{H}_5\text{OH}/\text{H}_2\text{SO}_4$  ?