

F-9-A

Roll No.

Total No. of Questions : 4+28]

[Total No. of Printed Pages : 15

XIIAP/Bi.AUTJKL24

1709-A

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-A (New)

F-9-A

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. $1 \times 10 = 10$
- (iii) Section–B contains 9 very short answer type questions of 2 marks each to be answered in 20–30 words. $2 \times 9 = 18$
- (iv) Section–C contains 9 short answer type questions of 3 marks each to be answered in 100 to 150 words. $3 \times 9 = 27$
- (v) Section–D contains 3 long answer type questions of 5 marks each to be answered in 150–200 words. $5 \times 3 = 15$
- (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 osmotic pressure of a solution is directly proportional to :
 - (A) The molecular concentration of the solute
 - (B) The absolute temperature at a given concentration
 - (C) The lowering of vapour pressure
 - (D) All of these

- (ii) Which of the following 0.1 M aqueous solutions will have the lowest freezing point ?
- (A) Potassium sulphate (B) Sodium Chloride
(C) Urea (D) Glucose
- (iii) The cell reaction $\text{Zn} + \text{Cu}^{2+} \rightarrow \text{Zn}^{2+} + \text{Cu}$ is best represented by :
- (A) $\text{Cu} | \text{Cu}^{2+} || \text{Zn}^{2+} | \text{Zn}$ (B) $\text{Pt} | \text{Zn}^{2+} || \text{Cu}^{2+} | \text{Pt}$
(C) $\text{Zn} | \text{Zn}^{2+} || \text{Cu}^{2+} | \text{Cu}$ (D) Any of these
- (iv) A first order has half life period of 34.65 seconds. Its rate constant is :
- (A) $3 \times 10^{-2} \text{ s}^{-1}$ (B) $4 \times 10^{-2} \text{ s}^{-1}$
(C) 20 s^{-1} (D) $2 \times 10^{-2} \text{ s}^{-1}$
- (v) The general outer electronic configuration of transition element is :
- (A) $(n-1) d^{1-10} ns^1$ (B) $(n-1) d^{10} ns^2$
(C) $(n-1) d^{1-10} ns^{1-2}$ (D) $(n-1) d^5 ns^1$
- (vi) Haloalkanes in the presence of alcoholic KOH under go :
- (A) Polymerisation (B) Elimination
(C) Substitution (D) Dimerisation

(vii) Alcohol which is used as beverage is :

- | | |
|----------------|-----------------|
| (A) Methanol | (B) Ethanol |
| (C) Butan-1-ol | (D) Propan-1-ol |

(viii) Benzene diazonium chloride reacts with phenol to give :

- | | |
|---------------------------|-------------------|
| (A) p-hydroxy azo-benzene | (B) Phenol |
| (C) Chloral | (D) Nitro-benzene |

(ix) Maltose is made of :

- | | |
|-----------------------------|-------------------------------------|
| (A) Two α -D glucose | (B) α and β -D glucose |
| (C) Glucose and fructose | (D) Fructose only |

(x) Vitamin B1 is :

- | | |
|----------------|----------------|
| (A) Riboflavin | (B) Cobalamine |
| (C) Thiamine | (D) Pyridoxine |

Section-B

(Very Short Answer Type Questions)

2 each

2. (i) Define activation energy of a reaction. Why different reactions proceed at different speeds ?
- (ii) Define half life period. How can you find the half life period of a first order reaction ?

- (iii) How does rate law differ from law of mass action ?
- (iv) Give two main basic postulates of Werner's theory of co-ordination compounds.
- (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 H_2SO_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) Define the terms :
- (a) Cell constant
- (b) Molar conductivity
- (c) Corrosion

- (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 diazonium 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) NH_3
- (c) $\text{C}_2\text{H}_5\text{OH}/\text{H}_2\text{SO}_4$?