

B-9-Z

Roll No.

Total No. of Questions : 4]

[Total No. of Printed Pages : 8

12thARM(SZ)JKUT2024

1109-Z

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.

12thARM(SZ)JKUT2024-1109-Z

B-9-Z

Turn Over

SECTION-A

1 each

OBJECTIVE TYPE QUESTIONS
(MULTIPLE CHOICE QUESTIONS)

1. Select the correct one :

(i) The molarity of 900 g of water is :

(A) 50 M

(B) 55.5 M

(C) 5 M

(D) Cannot be calculated

(ii) The depression in freezing point for 1 M urea, 1 M glucose and 1 M NaCl are in the ratio :

(A) 1 : 2 : 3

(B) 3 : 2 : 2

(C) 1 : 1 : 2

(D) None of these

(iii) In the electrolytic cell, flow of electrons is from :

(A) Cathode to anode in the solution

(B) Cathode to anode through external supply

(C) Cathode to anode through internal supply

(D) Anode to cathode through external supply

(iv) The time required for 100 percent completion of a zero order reaction is :

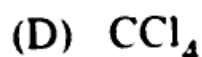
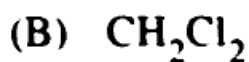
(A) $\frac{2K}{a}$

(B) $\frac{a}{2K}$

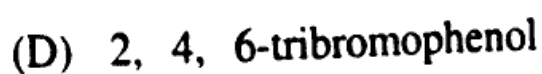
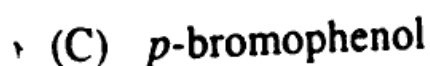
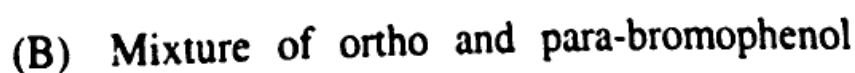
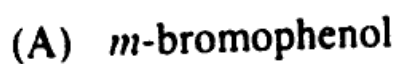
(C) $\frac{a}{K}$

(D) aK

(v) Among the following, the molecule with highest dipole moment is :



(vi) Phenol reacts with bromine in chloroform at low temperature to give :



(vii) Strongest base is :

- (A) $C_6H_5NH_2$
- (B) $CH_2=CHCH_2NH_2$
- (C) $HC=CCH_2NH_2$
- (D) $CH_3CH_2CH_2NH_2$

(viii) $KMnO_4$ on heating to red hot gives :

- (A) $K_2MnO_4 + MnO_2 + O_2$
- (B) $K_2MnO_3 + MnO_2 + O_2$
- (C) $K_2O + MnO_2 + O_2$
- (D) None of these

(ix) Nitrogen base that is found in RNA but absent in DNA is :

- (A) Uracil
- (B) Thymine
- (C) Cytosine
- (D) Adenine

(x) Deficiency of Vitamin B_1 causes the disease :

- (A) Convulsion
- (B) Beri-Beri
- (C) Cheilosis
- (D) Sterility

SECTION-B

2 each

VERY SHORT ANSWER TYPE QUESTIONS

2. (i) What is the effect of temperature on the rate of reaction ?
- (ii) What is the difference between inner and outer orbital complexes ?
- (iii) Direct nitration of aniline is not carried out at all. Explain why.
- (iv) How will you synthesise salicylic acid from phenol ?
- (v) Write *two* main functions of carbohydrates in plants.
- (vi) Write IUPAC names of :
- (a) $[\text{CrCl}_2(\text{en})(\text{NH}_3)_2]^+$
- (b) $\text{K}_3[\text{Fe}(\text{CN})_6]$
- (vii) Why molecularity is applicable only for elementary reactions and order is applicable for elementary and as well as complex reactions ?
- (viii) How does average rate of reaction differ from instantaneous reaction rate ?
- (ix) Why are haloarenes less reactive than haloalkanes towards nucleophilic substitution reactions ?

SECTION-C

3 each

SHORT ANSWER TYPE QUESTIONS

3. (i) Explain the following about acetic acid :
- (a) Its boiling point is higher than that of *n*-propanol
 - (b) It is weaker than chloroacetic acid and formic acid
 - (c) Acetic acid is a stronger than phenol.
- (ii) Define conductivity and molar conductivity for the solution of an electrolyte.
- (iii) Explain the following about transition metals :
- (a) Magnetic behaviour
 - (b) Oxidation states
- (iv) How is potassium dichromate prepared from chromite ore ?
Give its three oxidising properties. <https://www.jkboseonline.com>
- (v) Discuss briefly giving an example in each case the role of co-ordination compounds in :
- (a) Biological system
 - (b) Medicinal chemistry
- (vi) How will you convert ethyl bromide to :
- (a) Ethane
 - (b) Ethoxyethane
 - (c) Ethanenitrile ?

(vii) What are phenols ? How do they differ structurally from aromatic alcohols ?

(viii) What is Hinsberg's reagent ? How will you distinguish between primary, secondary and tertiary amines by it ?

(ix) What are α -amino acids ? How are they related to proteins ?
Give the structure of two amino acids ?

SECTION-D

5 each

LONG ANSWER TYPE QUESTIONS

4. (i) Define :

(a) Mole fraction

(b) Molality

(c) Molarity

Calculate the mole fraction of ethylene glycol ($C_2H_6O_2$) in a solution containing 20% of $C_2H_6O_2$ by mass.

Or

Define and explain elevation in boiling point. How can you calculate the molecular mass of a non-volatile solute with it ?

(ii) Define Kohlrausch's law. How does it help in :

- (a) Calculation of λ° for a weak electrolyte
- (b) Degree of dissociation of a weak electrolyte ?

Or

What are fuel cells ? Describe $H_2 - O_2$ fuel cell.

(iii) Describe the following :

- (a) Esterification
- (b) Cannizzaro reaction
- (c) Cross aldol condensation
- (d) Decarboxylation

Or

- (a) Write *five* methods for the preparation of aldehydes.
- (b) How are aldehydes distinguished from ketones using Tollen and Fehling's reagents ? Give chemical reactions.

<https://www.jkboseonline.com>

Whatsapp @ 9300930012

Send your old paper & get 10/-

अपने पुराने पेपर्स भेजे और 10 रुपये पायें,

Paytm or Google Pay से

12thARM(SZ)JKUT2024-1109-Z

B-9-Z