

CHEMISTRY QUESTION PAPER

Time Duration: 2Hrs

Maximum Marks:40

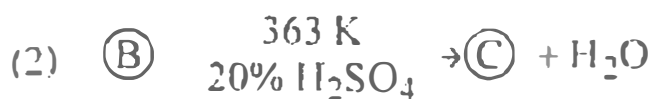
- Note :*
- (i) All questions carry equal marks.
 - (ii) Write balanced chemical equations and draw neat and labelled diagrams wherever necessary.
 - (iii) Figures to the right hand side indicate full marks.
 - (iv) Answer to every new question must be started on a new page.

● 1. Select and write the most appropriate answer from the given alternatives for each sub-question : [8]

(i) Which is the strongest base among the following : (1)

- (a) $\text{La}(\text{OH})_3$ (b) $\text{Lu}(\text{OH})_3$
(c) $\text{Ce}(\text{OH})_3$ (d) $\text{Yb}(\text{OH})_3$

(ii) The compound (C) in the following series of reactions is : (1)



- (a) 2-methylpropene (b) but-2-ene
(c) but-1-ene (d) propene

- (iii) Products obtained when cold HI reacts with isopropyl methyl ether at 273 K are : (1)
- (a) isopropyl iodide and methyl alcohol
 - (b) isopropyl alcohol and methyl iodide
 - (c) isopropyl iodide and water
 - (d) methyl iodide and water
- (iv) The amine that reacts with $\text{NaNO}_2 + \text{HCl}$ to give yellow oily liquid is : (1)
- (a) ethyl amine
 - (b) diethyl amine
 - (c) isopropyl amine
 - (d) secondary butyl amine
- (v) Which of the following is a regenerated fibre? (1)
- (a) Nylon 6, 6
 - (b) Nylon 6
 - (c) Cotton
 - (d) Viscose Rayon
- (vi) Which of the following is used as a pain killer? (1)
- (a) Antibiotic
 - (b) Analgesic
 - (c) Antipyretic
 - (d) Antioxidants
- (vii) In urotropine, the number of N–N bonds is : (1)
- (a) 6
 - (b) 4
 - (c) 2
 - (d) 0
- (viii) Which of the following events does NOT occur during $\text{S}_{\text{N}}^{\ominus}$ reaction mechanism? (1)
- (a) Backside attack of nucleophile
 - (b) Formation of carbonium ion
 - (c) One step continuous process
 - (d) 100% inversion of configuration

Q. 2. (A) Attempt any ONE : [8]

- (i) Write a note on lanthanoid contraction. (2)
- (ii) How are simple ethers and mixed ethers prepared using diazomethane? (2)

(B) Attempt any ONE :

- (i) What is quaternary ammonium salt?
What happens when triethyl amine is heated with ethyl chloride? (2)
- (ii) Write the names and structural formulae of the raw materials used in the preparation of Nylon-6, 6. (2)

(C) Answer the following :

- (i) What are alkyl halides? How is n-propyl bromide prepared from propylene? (2)
- (ii) Distinguish between nucleophile and electrophile. (2)

Q. 3. (A) Attempt any ONE : [8]

- (i) How is ethyl acetate prepared from (3)
- (a) silver acetate
(b) acetic anhydride
(c) acetyl chloride?
- (ii) What is peptide linkage? How is dipeptide formed?
How is Zwitter ion represented? (3)

(B) Attempt any ONE :

- (i) Distinguish between fats and oils. How is triolein converted to tristearin? (3)
- (ii) Write the structural formulae of probable isomeric alcohols having molecular formula $C_4H_{10}O$. What is the action of sodium-amalgam and water on ethyl methyl ketone? (3)

(C) Answer the following :

Write the structure and IUPAC names of the following compounds – (2)

- (i) isobutylamine
(ii) ethyl methyl amine

Q. 4. (A) Answer the following : [8]

What is the action of the following reagents on ethanol? (4)

- (a) Lucas reagent
- (b) Phosphorous pentachloride
- (c) Red phosphorous and bromine
- (d) Acidified potassium dichromate

(B) Attempt any ONE :

(i) Explain the mechanism of alkaline hydrolysis of t-butyl bromide with energy profile diagram. (4)

(ii) How does acetaldehyde react with the following reagents? (4)

- (a) Dilute aqueous caustic soda
- (b) Hydrazine
- (c) Ammoniacal silver nitrate
- (d) Phosphorous pentachloride

Q. 5. (A) Attempt any ONE : [8]

(i) Define: (4)

- (a) optical activity
- (b) asymmetric carbon atom
- (c) enantiomers
- (d) racemates

(ii) How is formaldehyde prepared from (4)

- (a) methylene dichloride
- (b) calcium formate?

Explain Cannizzaro reaction.

(B) Attempt any TWO :

(i) How is ethyl methanoate converted into propan-2-ol? (2)

(ii) Write physical methods of food preservation. (2)

(iii) Differentiate between lanthanoides and actinoides. (2)