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GSQ/M-20 **1754**

CHEMISTRY

Paper XX (CH-306)

Organic Chemistry

Time : Three Hours] [Maximum Marks : 32

Note : Attempt *Five* questions in all, selecting *two* questions from each Section. Q. No. **1** is compulsory.

1. (a) Why α-hydrogen are acidic in nature ?

(b) Convert Furan into Pyrrole.

(c) Why thiophene is more aromatic than furan ?

(d) Define Electrophoresis.

(e) Explain peptide bond.

(f) Why pyridine is more basic than pyrrole ?

(g) What are monomers of Buna-S ?

(h) What is synthetic rubber ? **1×8=8**

Section A

2. (a) Of enolate ion obtained from acetone and diethyl malonate, which is more stable and why ?

(b) Write the Claisen condensation reaction to prepare ethyl acetoacetate. Give mechanism.

(c) Explain the role of acid and base catalysis in keto-enol tautomerism. **1½+2½+2**

3. (a) Convert the diethyl malonate into :

(i) 3-methylbutanoic acid

(ii) β-keto acid.

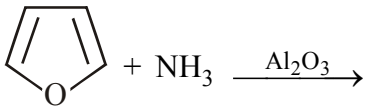
(b) Compare the aromatic character of pyrrole, furan and thiophene.

(c) Why electrophilic substitution in pyridine takes place at 3-position more easily ? **3+1½+1½**

4. (a) Compare the basic character of pyridine, priperidine and pyrrole giving reason for your answer.

(b) What is Chichibabin reaction ? Give its mechanism.

(c) Complete the following :

(i)  **3+2+1**

(ii) $CH_3CH_2CH_2CH_3 + 4S \xrightarrow{600^oC}$

5. (a) Explain the Skraup synthesis of quinoline with mechanism.

(b) Write the chemical equation of the following :

(i) Isoquinoline is heated with alkaline $KMnO_4$

(ii) Quinoline is treated with Br_2 and Ag_2SO_4 in H_2SO_4.

(iii) Indole is treated with SO_3.

(c) Explain the orientation of electrophilic substitution of quinoline **2½+1½+2**

Section B

6. (a) What do you mean by isoelectric point ? Explain why different α-amino acids have different isoelectric points.

(b) Write *two* methods of synthesis of α-amino acid.

(c) Differentiate between primary and secondary structure of proteins. **2+2+2**

7. (a) What are peptides ? Sketch the synthesis of a dipeptide ?

(b) Discuss stereochemistry of α-amino acid.

(c) Explain Denaturation and Renaturation of proteins. **2+2+2**

8. (a) Explain, what is chain growth polymerisation, with example.

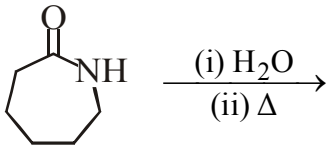
(b) Give the method of preparation and uses of (i) Teflon (ii) PVC.

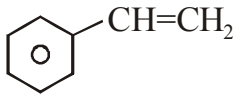
(c) Explain the process of vulcanisation. **2+2+2**

9. (a) Write mechanism of free radical addition polymerisation.

(b) Give the synthesis of Bakelite. Also write its uses.

(c) Complete the reaction and give the structure and name of polymer so obtained :

(i) 

(ii)  + $CH_2=CH-CH=CH_2 \rightarrow$

2+2+2