

[56]
Eng.**SARDAR PATEL UNIVERSITY**B. Sc. Vth - SEMESTER EXAMINATIONThursday, 24th December, 2020

2.00 p.m. to 4.00 p.m.

US05CCHE21 - ORGANIC CHEMISTRY

Total Marks : 70

Note: (i) All questions are to be attempted. (ii) Figures to the right indicate marks.**Q.1 Choose the correct option for the following : [10]**

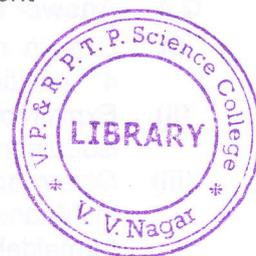
- (i) is not aromatic in nature ?
 (a) pyrrole (b) furan (c) piperidine (d) thiophene
- (ii) Isoniazid is used in the treatment of ?
 (a) malaria (b) gaute (c) cancer (d) tuberculosis.
- (iii) Quinoline can be prepared using ?
 (a) Chichibabin reaction (b) Skraup synthesis
 (c) Knorr synthesis (d) Hauben-Hoesch reaction
- (iv) Using which reaction Cinnamic acid can be prepared ?
 (a) Perkin Condensation (b) Aldol
 (c) Reimer-tiemann (d) Sommelet
- (v) In a Benzilic acid rearrangement in the presence of strong base 1,2-diketones is converted into
 (a) α -Hydroxy ester (b) α -Hydroxy acid
 (c) α -Hydroxy ketone (d) α -Hydroxy amine
- (vi) Conversion of ketoxime to nitrogen substituted amide in the presence of acid catalyst is known as
 (a) Baeyer – Villiger Oxidation (b) Favorskii rearrangement
 (c) Sommelet rearrangement (d) Beckmann rearrangement
- (vii) Nylon-6,6 is prepared from
 (a) succinic acid and hexamethylene diamine
 (b) adipic acid and hexamethylene diamine
 (c) oxalic acid and hexamethylene diamine
 (d) terephthalic acid and hexamethylene diamine
- (viii) Which one of the following has very high tensile strength?
 (a) fibers (b) elastomers
 (c) plastics (d) none of these
- (ix) *terpenoids* upon treatment with phenylhydrazine yields phenylhydrazone derivative indicates that, it contains group.
 (a) carbonyl (b) phenolic -OH (c) alcoholic -OH (d) -COOH
- (x) Camphor upon oxidation with conc. HNO_3 gives
 (a) cinnamic acid (b) camphoric acid
 (c) oxalic acid (d) none of these

Q.2 State whether the following statements are true or false: [08]

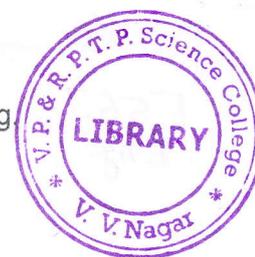
- (i) Picoline upon oxidation gives pyridine carboxylic acid.
- (ii) In a heterocyclic compounds, numbering starts from carbon atom.
- (iii) Benzoin condensation reaction proceeds using alcoholic KCN.
- (iv) Aldehyde in presence of $\text{H}_2\text{SO}_4/\text{HN}_3$ gives nitrile and N-formyl derivatives.

[13]

P.T.O.



- (v) Thermoplastics is a cross-linked polymer and it harden on heating
- (vi) Natural rubber have trans configuration at every double bond.
- (vii) Camphor can be prepared from camphene.
- (viii) β - carotene contains eleven double bonds.



Q.3 Answer the following (Attempt any ten) : **[20]**

- (i) Explain piperidine is stronger base than pyridine.
- (ii) How will you convert β -picoline into 3-aminopyridine ?
- (iii) Write about Chichibabin reaction.
- (iv) Show that Birch reduction of toluene gives 2,5-dihydrotoluene.
- (v) Explain Hoffmann rearrangement.
- (vi) How benzoic acid in presence of liquid ammonia / sodium metal and ethanol is converted in to 1,4-dihydrobenzoic acid ?
- (vii) Give the synthesis of vulcanized rubber.
- (viii) Discuss resonance in conjugated diene.
- (ix) What are the difference between addition polymerization and condensation polymerization?
- (x) Give oxidation product of : (a) citral and (b) α -pinene.
- (xi) Give the name of methods used for the isolation and separation of terpenoids from plant materials.
- (xii) Predict the number of ring(s) present in the terpenoid having molecular formula $C_{10}H_{16}$, and containing one double bond.

Q.4 Answer the following (Attempt any four) : **[32]**

- (i) Explain nucleophilic substitution reaction in pyridine is preferred at the 2nd and 4th position. Also give synthesis of 1-azaphenanthrene using Skraup synthesis.
- (ii) Explain pyrrole is extremely weak base. Also write synthesis of 1-methyl isoquinonlone using Bischler-Napieralski synthesis.
- (iii) Give reaction mechanism for the preparation of Mannich base. Also explain that in Mannich reaction out of two $--CH_2--$ group of Mannich base one is from formaldehyde substrate.
- (iv) Write reaction mechanism for Benzilic acid rearrangement and Favorskii rearrangement.
- (v) Give classification of polymers. Discuss step reaction polymerization giving synthesis of Dacron.
- (vi) Discuss coordination polymerization and its advantage over free radical polymerization for the preparation of polyethylene. Also discuss the tacticity in polypropylene.
- (vii) Write synthesis of Camphor. Give evidence for the presence of two β - ionone units in β - carotene.
- (viii) Write synthesis of Citral. Also discuss Wallach's oxidative degradation for the determination of position of double bond and *tert.* alcoholic group in the structure of α -terpeniol.

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