SHREE H. N. SHUKLACOLLEGE OF SCIENCE

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T.Y. B.Sc.(Sem-5) Chemistry
Question bank

Ch-1 Name Reaction and Rearrangement

[A] Answer the following **[1]**

1. Synthesis of Papaverine is a sample of which reaction?
2. In Arnt- Eisterd reaction mainly which reagent is used?
3. Which reaction gives Isoquinoline Dervatives?
4. Preparation of Urathennes is possible by Re-arrangement.
5. Thermal decomposition of acid-and into isocynate is known as a _____reaction.
6. Preparation of α-amino acid is possible by which re-arrangement ?
7. Give the reaction for Baeyer-Villager Oxidation BVO)
8. Provide the full form of m-CPBA
9. Which Per-acid is the most common reagent for Baeyer-Villiger oxidation and why?
10. Provide the reaction. Acetophenone into Phenyl acetate
11. Which reaction is useful for the conversion of 1.2-Diketone into Anhydride
12. Which reaction used to form cinnamic acid?
13. Which reaction intermediate form in Arndt-Eistert reaction?
14. Which reaction intermediate form in Curtius Rearrangement?
15. Which metal used for enolate ion in Reformotsky reaction?

[B] Answer the Following Questions **[2]**

1 Give the synthesis of 2-Furyl-acetic acid from 2-Furoic acid.
2. Give conversion of 3-Amino-pyridine from Nicotinic acid.
3. Provide the synthesis of 5-Methoxy-isoquinoline from o-Methoxy-phenyl ethylamine
4. Give the reaction mechanism of Bischler Napieralski reaction
5. Provide the preparation of Ethylamine from Propancyl chloride.

[C] Answer the Following Questions **[3]**

1. Give the synthesis of α-amino acid by the use of Curtius re-arrangement.
2. Write reaction and mechanism of Curtius re-arrangement.
3. Give the applications of Baeyer Villiger Oxidation.

[D] Answer the Following Questions **[5]**

1 Write Arndt-Eisterd reaction with mechanism using the example of 2-furoic acid
2. Explain Arndt-Eisterd reaction with mechanism
3. Describe Bischler Napieralski reaction

4. Explain Baeyer Villiger re-arrangement.
5. Describe Curtius re-arrangement.

Ch-2 Alkaloids

[A] Answer the following **[1]**

1. Who was Best proposed the term Alkaloid?
2. Which alkaloid is not physiologically active and it has not contain N-atom?
3. Which alkahoid in obtained from seeds of the Poppy plant?
4. Papaverine is extracted from which plant?
5. Coniine is extracted from which plant?
6. Which heterocycle ring la present in Papaverine ?
7. Which type of heterocyclic ring is present in Coniine?
8. Nicotine is which type of alkaloids?
9. Zeisel method is used for detection of which group?
10. Which is the first natural compound to be synthesized?
11. Give the nature of compound when Coniine in distilled with Zn dust.
12. Nicotine is extracted from_____
13. Which compound is responsible for aroma of Tabacoa smoke?
14. In Nicotine, Pyrrolidine ring (by its alpha position) is attached to which position of Pyridine ring?
15. Conline contains which group at second position of piperidine ring?
16. -N-CH_3 group is attached to Which ring. In Nicotine?
17. Which alkaloid is optically inactive (achiral) alkaloid
18. Give the name of optically active (chiral) alkaloid
19. Which alkaloid groups are containing in Opium?
20. How many methoxy groups is/are present in Papaverine?
21. How many-COOH groups are present in meta-hemipinic acid.

[B] Answer the Following Questions **[2]**

1. How to determine presence of phenolic -OH group in alkaloid
2. How to determine presence aldehyde and ketone groups in alkaloids?
3. How is determine presence-C-CH_3 group in alkaloids?
4. Discuss reaction of Conine with CH_3l and HNO_2
5. Discuss reaction of Nicotine with CH_3I and $KMnO_4$
6. Discuss reaction of Papaverine with KOH and CH_3I
7. Explain Zeisel method.
8. Give the structures of four products obtained when Papaverine is oxidized with conc. $KMnO_4$
9. Give the synthesis of Veratric acid from p-hydroxy benzoic acid.
10. Give the synthesis of Coniine by Ledenberg method.

11. Give the synthesis of Conine by Bergmann method
12. Write the structure of Dibromo-cotinine & Dibromoticonine.

[C] Answer the following **[3]**

1. Give clarification of alkaloids
2. How to determine presence of alcoholic -OH group and in alkaloids
3. How to determine presence ester, amide, lactone and lactum group in alkaloids.
4. How to determine Alkoxyl (OR) group in alkaloids
5. Discuss about how to confirm presence of N-alkyl group in alkaloids
6. Prove that Piperidine ring is present in Coniine
7. Prove position and nature of side chain in Nicotine
8. Discuss Pinner's work in structure determination of Nicotine.
9. Explain hofmann's degradation method.
10. Explain Emde's degradation method.
11. Give the conversion of hygrinic acid from nicotine.

[D] Answer the following **[5]**

1. What are the alkaloids? Discuss classification of alkaloids.
2. Describe isolations of alkaloids.
3. Explain how to determine nature of oxygen in alkaloids.
4. Explain Hofmann's degradation method and its limitations.
5. Explain Emde's degradation method.
6. Discus von Braun's method.
7. Explain constitution of coniine.
8. Give the two synthesis of Coniine
9. In Provide evidence about Nicotine is a β-pyridyl-α-pyrolidine alkaloids.
10. Give method of preparation of β-Pyridyl-N-methyl-α-pyrrolidine.
11. Write only reaction of Papaverine heated with con.

Ch-3 Carbohydrates

[A] Answer the following **[1]**

1. What is the general formula of Carbohydrates?
2. Give the definition of Carbohydrates.
3. Low molecular weight carbohydrates are known as_____
4. High molecular weight carbohydrates are named as_____
5. Give the examples of Polymer carbohydrates

6. Raffinose in a which type of saccharideas?
7. The emerging beam of light having oscillation in a single plane is called _____
8. Which compound is a arbitrary standard for D- & L-configuration?
9. Monosaccharides react with Phenyl-hydrazine, how many moles of reagent are consume?
10. Pair of Diastereomeric aldoses, for Epimers which number of carbon configurations differ only?
11. What is the name of C-2 Epimers of D-Glucose
12. Saccharides is fermented by which enzyme?
13. Who was given method of conversion of aldose to the next higher keton?
14. Give a name of a step down reaction.
15. Glucose on reduction with Phosphorus and HI yields which products"
16. Glucose on oxidation with Nitric acid forms which compound?
17. Who was awarded Nobel Prize in 1902, for configuration of Glucose?
18. Aldopentose has how many numbers of stereoisomers?
19. Kiliani synthesis of D-Arabinose gives_____&_____
20. Which sugar is also named as fruit sugar?
21. Fructose on reduction with Phosphorus and HI yields which products?
22. Complete the reaction Fructose on oxidation with Nitric acid.
23. What is Anomers?
24. Give definition of Mutarotation.
25. Constant values of optical rotation of Glucose is_____

[B] Answer the following **[2]**

1. Give the structure of D-Glucose and D-Fructose
2. Explain production of Carbohydrates
3. Give explanation about definition and general formula of carbohydrates
4. Provide structure and name of Aldopentose.
5. Give definition of optical activity and (+) and (-) Isomers.
6. Explain Oxidation of Aldose by Nitric acid
7. Give details about Fermentation
8. Provide conversion of D-Glucose in to D-Fructose
9. Give the conformational structure of α-D-Gluco-pyranose and β-D-Gluco-pyranose.

[C] Answer the following **[3]**

1. Write short note about Oligo-saccharides
2. Note down about D- and L-Specification for mono-sacharides
3. Give detail about R and S convention for absolute configuration.
4. Explain Periodic oxidation of carbohydrates

5. Elucidate Osazone formation of D-Glucose and D-Fructose
6. Illustrate: Epimerization
7. Give conversion of D-Glucose in to D-Fructose.
8. Write about Kiliani reactions.
9. Discuss Sowden Nitro methane step-up reaction.
10. Give step-down reaction in Aldose series (Ruffs method)
11. Explain constitution of D-Glucose.
12. Explain methylation method for Pyranose ring structure of D-Glucose
13. Write short note on mutarotation of D-Glucose.

[C] Answer the following **[5]**

1. Explain classification and nomenclature of carbohydrates
2. Give the conversion of D-Glucose in to D-Fructose and D-Fructose in to D-Glucose
3. Provide reactions about conversion of aldose in to (a) corresponding ketose. (b) next higher ketose and (c) ketose having two more carbon atom
4. Describe configuration of D-Glucose
5. Explain ring structure of Alldose (Cyclic structure of D-Glucose).
6. Describe Methylation method for determination of ring size of D-Glucose
7. Describe Periodic oxidation for determination of ring size of D-Glucose

Ch-4 Polynuclear Aromatic Hydrocarbons

[A] Answer the following **[1]**

1 Oxidation of diphenyl methane to form____

2 Two moles of benzene react with formaldehyde to form which compound?

3 Naphthalene oxidised with alkaline $KMno_4$ to form_____

4 Naphthalene oxidised with chromic acid to form_____

5 which reduced form of Naphthalene are used as a motor fuel?

6 Between Benzene, Naphthalene and anthracene which is more reactive?

7 All carbon atom in naphthalene and anthracene having which hybridization?

[B] Answer the following **[2]**

1 Explain classification of polynuclear hydrocarbon.

2 Give the two method for synthesis of Diphenyl

(a) By Ullman reaction

(b) From Benzene

3 Complete the reaction anthracene react with Ni/H_2

4 Explain use of naphthalene

5 Explain sulphonation of naphthalene

6 Draw the classical formula and conformation for …

(a) 1,2 Disubstituted-cyclohexane

(b) 1,3 Disubstituted-cyclohexane

[C] Answer the following **[3]**

1. Discuss the chemical properties of Diphenyl
2. Give the synthesis of Naphthalene by Haworth method.
3. Give the synthesis of Anthracene from Pthaleic anhydride and Benzene.

[D] Answer the following **[5]**

1. Explain the chemical properties of naphthalene
2. Write any two synthesis of Biphenyl or Diphenyl.
3. Write any two synthesis and chemical properties of anthracene