

FOURTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2017

(CUCBCSS-UG)

Chemistry

CHE 4B 04—ORGANIC CHEMISTRY—I

Time : Three Hours

Maximum : 80 Marks

Section A (One Word)

*Answer all questions.**Each question carries 1 mark.*

1. The next member in the homologues series of Propanone is _____.
2. Draw the structure of functional isomer of $\text{CH}_3\text{—O—CH}_3$.
3. Out of maleic acid and fumaric acid which will give its own anhydride on heating.
4. The mono ester of one of the tartaric acids is optically active but give inactive product when hydrolysed. The tartaric acid isomer is _____.
5. The major product formed by treating 2-Bromobutane with alcoholic KOH is _____.
6. The more basic amine among aniline and p-anisidine is _____.
7. An example for a conjugated diene is _____.
8. An alkyne with molecular formula C_4H_6 give a red precipitate with ammonical cuprous chloride solution. The alkyne is _____.
9. One unique property of Carbon which accounts for the occurrence of so many organic compounds is _____.
10. In the dehydrohalogenation reaction of $\text{CH}_3\text{—CH}_2\text{—CH}_2\text{—CH}_2\text{Cl}$ and $\text{CH}_3\text{—CH}_2\text{—CHCl—CH}_3$, Saytzeff's rule is applicable only to _____.

(10 × 1 = 10 marks)

Section B (Short Answers)

*Answer any ten questions.**Each question carries 2 marks.*

11. Draw the structural isomers of monochloropropane. What is the name given for this type of isomers ?
12. 1-Bromopropane and 2-Bromopropane are warmed with metallic sodium in dry ether. What are the products formed ?
13. Give a short account of Keto-enol tautomerism by selecting a suitable example.
14. Which isomeric alkene is formed when 2-Butyne is reduced with Sodium in liquid ammonia ? Write the reaction.
15. Compare the acidity of fumaric acid and acetic acid. Justify your answer.
16. Which is more basic Pyrrole or Pyridine ? Why ?

Turn over

17. Give two examples each for activating and deactivating groups.
18. Predict the structure of alkyne which would give Dimethyl glyoxal on ozonolysis.
19. Give a test for unsaturation of an organic compound. Explain the chemistry.
20. Cyclopentadienyl anion is aromatic. Why?
21. What are Anti aromatic compounds? Give one example.
22. What is meant by free radical substitution? Give one example.

(10 × 2 = 20 marks)

Section C (Paragraphs)

*Answer any five questions.
Each question carries 6 marks.*

23. Explain the mechanism of halogenation in benzene.
24. Give an account of ozonolysis of alkenes. How ozonolysis helps in determining the position of double bond in alkenes? Illustrate with example.
25. Discuss the mechanism of dehydration of alcohols.
26. Explain why α substitution in naphthalene is more favourable than β substitution.
27. Discuss with suitable example, the E and Z system of nomenclature of geometrical isomers.
28. What are Carbenes? Give its hybridization and structure. Write two reactions in which they are formed.
29. Give a short account of optical isomerism of compounds lacking asymmetric carbon atoms.
30. Explain hyperconjugative effect and compare the stabilities of 1-Butene and 2-Butene, with this effect.

(5 × 6 = 30 marks)

Section D (Essays)

*Answer any two questions.
Each question carries 10 marks.*

31. (a) What do you understand by Chair and Boat conformations of cyclohexane? Why chair form is more stable than boat form?
- (b) Write a short note on asymmetric synthesis.

(5 + 5 = 10 marks)

32. What are Carbanions? Discuss the formation, hybridization, structure and stability of Carbanions.
33. (a) Discuss the cis and trans hydroxylation of alkenes.
- (b) Give a brief account of Diels Alder reaction.

(6 + 4 = 10 marks)

34. (a) Taking suitable examples illustrate different rules followed to assign R and S notation to optical isomers.
- (b) Suggest two methods to resolve racemic Lactic acid into optically active forms.

(5 + 5 = 10 marks)

(2 × 10 = 20 marks)