

FIFTH SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2019

(CUCBCSS-UG)

Chemistry

CHE 5B 07—ORGANIC CHEMISTRY—II

Time : Three Hours

Maximum : 80 Marks

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

1. Reaction of Potassium-t-butoxide with methyl iodide gives _____.
2. Structure of pyridine is represented as _____.
3. Dibenzyl ether reacts with phenyl lithium, followed by acid hydrolysis to form benzyl phenyl carbinol. This reaction is known as _____.
4. The number of structural isomers of alcohols with molecular formula C_3H_7OH is _____.
5. Luca's test is used to determine the type of _____.
6. Oxidation of alkenes with per trifluoroacetic acid forms _____.
7. The appearance of silver mirror in Tollen's test indicates the presence of _____.
8. Hinberg reagent is _____.
9. Nitrobenzene when reduced with $Zn + NaOH$ gives _____.
10. Carbyl amine test is a diagnostic test for _____.

(10 × 1 = 10 marks)

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

11. Explain why an alkyl halide is more reactive than vinyl chloride.
12. How is methyl magnesium iodide prepared ?
13. Explain why phenol is more acidic than ethyl alcohol.
14. Explain Claisen rearrangement with the mechanism.
15. Give an account on the mechanism of aldol condensation.
16. Discuss the structure of carboxylate anion.
17. How is Oxalic acid prepared ?
18. How do you account for acetyl chloride having a lower boiling point than acetic acid ?

Turn over

19. Explain the role of inductive effect of alkyl group on the strength of basicity of amines.
20. How will you distinguish between 1°, 2° and 3° amines ?
21. Explain the preparation of methyl orange.
22. Write the mechanism of Claisen condensation.

(10 × 2 = 20 marks)

Section C

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

23. Give the mechanism, stereochemistry and kinetics of SN¹ and SN² reactions for the hydrolysis of alkyl halide.
24. (a) Explain Riemer-Tiemann reaction.
(b) Write a note on Kolbe's reaction.
25. Discuss Wolff-Kishner reduction and MPV reduction.
26. (a) Explain HVZ reaction.
(b) Explain Blanc's rule.
27. Explain the properties of pyridine, furan and indole.
28. (a) What is Zaytseff rule ? Explain.
(b) Differentiate between substitution and elimination reaction.
29. (a) Explain the uses and health effects of CCl₄.
(b) Explain the uses of chloroform.
30. Discuss Cannizzaro reaction and explain the probable mechanism of this reaction. What are the products when a mixture containing formaldehyde and benzaldehyde is subjected to this reaction ?

(5 × 6 = 30 marks)

Section D

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

31. What is ring substitution in aromatic amines ? Write the following ring substitution of aromatic amines :
 - (a) Halogenation.
 - (b) Sulphonation.
 - (c) Nitration.
32. (a) What is nitro-acid tautomerism ?
(b) Write the mechanism and stereochemistry of Hoffmann elimination of amines.
(c) What happens when acetaldehyde is treated with dilute NaOH ?

33. (a) What is glacial acetic acid ?
- (b) How do you use benzene diazonium chloride to prepare the following ?
- (i) Phenol.
 - (ii) Bromobenzene.
 - (iii) *p*-hydroxy azobenzene.
- (c) Explain Beckmann rearrangement with the mechanism.
34. (a) How is urea prepared ? Discuss its important reactions.
- (b) How is phenol manufactured from coal tar ? How is it purified ?
- (c) Write a short note on Perkin's reaction.

(2 × 10 = 20 marks)