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Reg. No. : .....

Name : .....

Fifth Semester B.Sc. Degree Examination, December 2022

First Degree Programme Under CBCSS

Chemistry

Core Course VII

CH 1543 : ORGANIC CHEMISTRY II

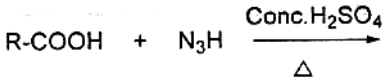
(2018-2019 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

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

1. What are crown ethers? Give one example.
2. Give one chemical test to distinguish between methanal and ethanal.
3. Which reduces Tollen's reagent. An aldehyde or ketone?
4. What is the use of adipic acid?
5. What are sulphonic acids? Give one example.
6. What is the synthetic application of Gabriel phthalimide syrcthesis?
7. Complete the reaction.



8. Which will absorb at a higher wave number due to V C=O_{str}

   (i) p-Chloroacetophenone

   (ii) m-Chloroacetophenone

9. Calculate the number of signals in the NMR spectrum of Dimethyl oxalate.

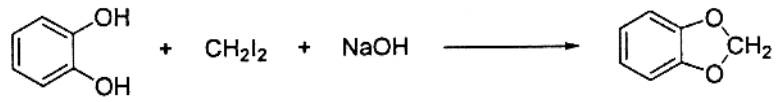
10. What will be the atom economy for a rearrangement reaction?

(10 × 1 = 10 Marks)

SECTION – B

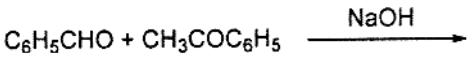
Answer **any eight** questions. **Each** question carries **2** marks.

11. Identify the given reaction.



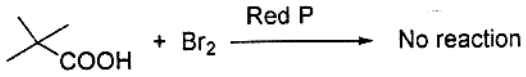
12. Which reagent is best suited for the following conversion?

13. Complete the reaction and give its mechanism.



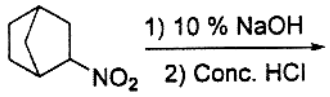
14. Give any two methods for the preparation of Anthranilic acid.

15. Explain why there is no product formation in the following reaction.



16. Compare the reactivity of acid derivatives.

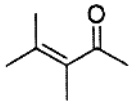
17. Predict the product and name the reaction.



18. Arrange the following in the increasing order of their basicity. Aniline, o-Toluidine, p-Toluidine, m-Toluidine

19. Define auxochrome giving an example.

20. Calculate λ_{max}



21. What is McLafferty rearrangement?

22. Define host and guest in supramolecular chemistry.

23. What is TMS? Why it is selected as a reference compound In H^1-NMR spectroscopy?

24. What is fingerprint region? Give its importance.

25. What is MPV reduction?

26. What is the iodoform test?

(8 × 2 = 16 Marks)

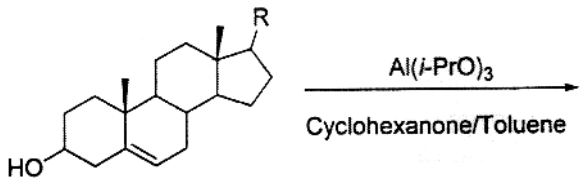
SECTION – C

Answer **any six** questions. **Each** question carries **4** marks.

27. What is DIBAL? What is its use?

28. Discuss the acid-catalysed ring opening of epoxides with the mechanism.

29. Complete the reaction and give its mechanism.



30. Convert acetic acid to formic acid and vice versa.

31. Discuss briefly the synthesis and application of saccharin.

32. Give any two synthetic applications of Diazomethane.

33. Explain Benzidine rearrangement.

34. An organic compound C_3H_60 contains a carbonyt group. How will its NMR spectrum decide whether it is an aldehyde or a ketone?

35. Write a note on the principles of green chemistry.

36. What is a phase transfer catalyst? Give one example.

37. Explain the different types of electronic transitions in UV/visible spectroscopy.

38. Explain microwave synthesis with examples.

(6 × 4 = 24 Marks)

SECTION – D

Answer **any two** questions. **Each** question carries **15** marks.

39. (a) Discuss the mechanism of **10**

    (i) Reimer-Tiemann reaction

    (ii) Fries rearrangement

    (b) Give a short account of the oxidative cleavage of glycol with periodic acid. **5**

40. Write a note on the following reactions. **15**

(i) Beckmann Rearrangement

(ii) Baeyer-Villiger oxidation

(iii) Perkin's reaction

(iv) Wolff-Kishner reduction

41. (a) Why is benzoic acid stronger than acetic acid but weaker than formic acid? **4**

(b) Discuss the effect of substituents on the acid strength of aromatic acids. **6**

(c) A compound having molecular formula $C_{10}H_{13}Cl$ gave the following set of NMR data: **5**

(i) δ 1.57 (6 H, singlet)

(ii) δ 3.07 (2 H, singlet)

(iii) δ 7.21 (5 H, singlet)

Giving reasons, assign a suitable structure to the compound. **5**

42. (a) Write a note on the methods to distinguish primary, secondary, and tertiary amines. **10**

(b) Briefly describe the types of non-covalent interactions in supramolecular chemistry. **5**

43. (a) Explain the principle of NMR spectroscopy. **8**

(b) Write a note on Clemmenson and Wolff-Kishner reduction. **7**

44. (a) Discuss the Woodward-Fieser rule for calculating λ_{max} of dienes. **8**

(b) Write a note on crown ethers. **7**

($2 \times 15 = 30$ Marks)

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