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TRIVANDRUM

Fifth Semester B.Sc. Degree Examination, February 2021

First Degree Programme under CBCSS

Chemistry

Core Course VII

CH 1543 – ORGANIC CHEMISTRY – II

(2018 Admission – Regular)

Time : 3 Hours Max. Marks : 80

SECTION – A
Very short answer type question.

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

1. Give the IUPAC name of the given compound.



2. What is Bayer -Villiger oxidation?

3. $A + C_2H_5MgBr \longrightarrow B \xrightarrow{H_2O/H^+}$ 2-Methylbutan-2-ol. Identify A.

4. What happens when formaldehyde is treated with ammonia?

5. Name the strongest halogenated acetic acid.

P.T.O.

6. Give the name of the product formed when ethanamine is heated with chloroform and alcoholic potash.

7. In what type of reactions the percentage atom economy is 100?

8. Mention any two advantages of a microwave assisted reaction when compared to its thermal reaction with same concentrations.

9. Mention the general nature of electronic spectrum of a species in solution.

10. How many signals will be obtained for the protons of TMS in its NMR spectrum?

(10 × 1 = 10 Marks)

SECTION – B

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

11. How is benzamide converted into aniline?

12. Arrange ortho, para and meta chloro anilines in the increasing order of basicities

13. Define bathochromic effect.

14. Mention the conditions for a molecule to be IR active.

15. Sketch the schematic PMR spectrum of toluene.

16. How many PMR peaks will be obtained for C_2H_5Br?

17. Explain green synthesis. Illustrate with one example.

18. What kind of feed stock should be used for green synthesis?

19. How is phenol converted into benzene?

20. How is coumarine prepared from salicylaldehyde?

21. With the help of equations, explain haloform test.

22. How does ethanal react with $NaHSO_3$? Give the equation.

23. Distinguish acetophenone and benzophenone chemically.

24. What happens when cinnamic acid is treated with dry soda lime?

25. How is tosyl chloride prepared?

26. What is Nef's reaction?

(8 × 2 = 16 Marks)

SECTION – C

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

27. How do the following reagents react with alcohols given against them?

(a) Jone's reagent 

(b) Collins reagent 

28. Explain what happens when primary and secondary alcohols react with alkaline $KMNO_4$.

29. Explain Lucas test to distinguish primary secondary and tertiary alcohols.

30. Explain Knoevenagel reaction with mechanism.

31. Explain the reactions of methyl magnesium bromide with the following compounds. What happens when the product is subsequently hydrolysed in acid medium?

(a) Propanal (b) Benzaldehyde

32. Explain how oxalic acid is commercially prepared. Explain the action of the following on oxalic acid.

(a) Con. Sulphuric acid (b) Heat

33. How is saccharin synthesized? Give equations.

34. Explain Hoffmann's bromamide reaction.

35. Draw the schematic PMR spectrum of ultrapure ethanol and explain.

36. Explain microwave synthesis. Give two examples one in aqueous medium and one in organic solvent.

37. How will you convert (a) butanoic acid into butane (b) aniline to para bromoaniline?

38. How can the isomers of C_2H_6O be differentiated using NMR spectroscopy?

(6 × 4 = 24 Marks)

SECTION – D

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

39. Discuss the mechanisms of the following reactions.
    (a) Perkin (b) Beckmann rearrangement (c) Claisen rearrangement.

40. (a) Explain the splitting of PMR signals into multiplets due to the spin-spin coupling, taking chloroethane as an example.
    (b) Explain crown ethers and its importance.
    (c) Explain how is a -O-CH_3 group estimated? **5+5+5**

41. What is green chemistry? Explain the need for green chemistry. Mention the goals of it. Discuss the limitations of green chemistry.

42. (a) How does phenol react with (i) CO_2 (ii) $CHCl_3$ and NaOH (iii) Br_2 in CC_{14} (iv) $NaNO_2$ and H_2SO_4
    (b) Explain (i) MPV reduction. (ii) Wolf Kishner reduction. **8+7**

43. Write notes on
    (a) Ascent and descent series in aliphatic carboxylic acid
    (b) Auxochrome chromophore concept.

44. Discuss various aspects related to the basic strengths of three kinds of aliphatic amines and ammonia.

(2 × 15 = 30 Marks)
