LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **CHEMISTRY**

THIRD SEMESTER – **NOVEMBER 2013**

CH 3506/CH 3502/CH 4500 – ORGANIC FUNCTIONAL GROUPS

Date : 06/11/2013 Dept. No. Max. : 100 Marks

Time : 9:00 - 12:00

PART-A

ANSWER ALL THE QUESTIONS: **(10x2=20)**

1. What is Sandmeyer reaction?
2. Write the structure and IUPAC name of sec.butyl chloride.
3. Name the reagents used in the preparation of the following compounds from phenol: a) o-nitrophenol b) o-cresol.
4. How will you prepare ethyl alcohol by hydroboration method?
5. Give the IUPAC names of diethyl ether and anisole.
6. How is anisole prepared from phenol?
7. Account for the polarity of carbonyl group.
8. What happens when o-nitrobenzaldehyde is reduced by MPV method?
9. How is crotonic acid prepared?
10. What is transesterification?

PART-B

ANSWER ANY EIGHT QUESTIONS: **(8x5=40)**

11. Starting from ethyl chloride how will you prepare the following compounds?
    a) Ethene b) Butane c) Ethyl alcohol d) Diethyl ether
12. Compare the salient features of S_N1 and S_N2 reactions.
13. How is phenol prepared from the following methods?
    a) Dow's process b) from diazonium salt c) from salicylic acid
14. Discuss the mechanism of Reimer-Tiemann reaction.
15. The –OH group of phenol is activating and o,p-directing in electrophilic substitution reactions. Account for this.
16. Explain Williamson's synthesis with its mechanism.
17. How is diethyl ether prepared? What happens when it is treated with the following reagents?
    a) Excess of HI b) Con.H_2SO_4 . (2+2+1)
18. Explain the mechanism of Wittig reaction.

19. Discuss Norrish type -I reaction.

20. What is haloform reaction? Explain with mechanism.

21. Compare the acidity of the following compounds:

a) Acetic acid & propionic acid b) Propionic acid & acrylic acid.

22. Discuss the action of heat on dicarboxylic acids.

PART-C

ANSWER ANY FOUR QUESTIONS: (4x10=40)

23. Explain the following:

a) E1 reaction b) Walden inversion c) Saytzeff's rule. (4+3+3)

24. a) Account for the lower boiling point of o-nitrophenol as compared with p-nitrophenol.

b) Arrange the following compounds in the decreasing order of acidity and give reason: p-cresol, p-nitrophenol, m-nitrophenol. (4+6)

25. Give any two methods of preparation of ethylene oxide. What happens when it is treated with a) H_2O/H^+ b) CH_3OH c) NH_3 d) $LiAlH_4$. (4+6)

26. Write short notes on the following reactions:

a) Crossed Cannizzaro reaction b) Reformatsky reaction c) Wolf-Kishner reduction. (3+4+3)

27. a) How is acetaldehyde prepared? How are the following compounds prepared from acetaldehyde? i) paraldehyde ii) isopropyl alcohol

b) How is succinic acid prepared? How does it react with

i) PCl_5 ii) NH_3 iii) ethanol. (5+5)

28. How will you bring about the following conversions?

a) Acetamide into methyl amine b) Acetyl chloride into acetaldehyde

c) Acetic anhydride into methyl acetate d) Ethyl acetate into ethylaceto acetate. (4+2+2+2)

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