



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – CHEMISTRY

THIRD SEMESTER – APRIL 2013

CH 3502/CH 4500 - ORGANIC FUNCTIONAL GROUPS - I

Date: 29/04/2013  
Time: 9:00 - 12:00

Dept. No.

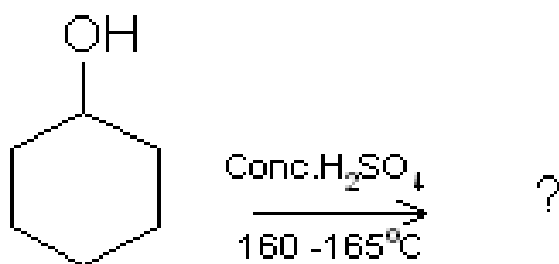
Max. : 100 Marks

PART – A

Answer ALL the questions:

(10 x 2 = 20)

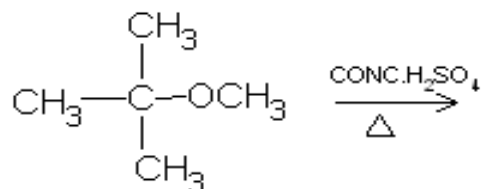
1. Write the products obtained when 1 – phenyl ethanol reacts with  $\text{SOCl}_2$ .
2. How is benzyl chloride prepared from benzaldehyde.
3. How is anisole prepared from phenol?
4. Complete the reaction



5. Give the IUPAC name of the following compounds

- i.  $\text{CH}_3 - \text{CH}_2 - \text{O} - \text{CH}_2 - \text{CH}_2 - \text{CH}_3$       ii.  $\text{C}_6\text{H}_5 - \text{O} - \text{CH}_3$

6. Predict the products



7. What happens when calcium acetate is heated? Give its equation?
8. What is Norrish type –II reaction?
9. What is trans esterification?
10. How will you prepare adipic acid from cyclohexanol?

## PART – B

Answer any EIGHT questions:

(8 x 5 = 40)

11. Discuss the mechanism of  $S_N1$  reaction with a suitable example.
12. Explain Saytzeff rule and Hofmann rule with an example.
13. How is phenol prepared from Cumene.
14. Explain why phenol is acidic whereas alcohol is almost neutral.
15. How do primary, secondary and tertiary alcohols differ in their behavior towards oxidation.
16. How is ethyl methyl ether prepared by Williamson's synthesis? What type of mechanism is followed.
17. Write a note on cleavage of ethers by acids.
18. Discuss the mechanism of benzoin condensation.
19. Write a note on Wittig reaction.
20. Discuss the mechanism of reduction of acetone with  $LiAlH_4$ .
21. Arrange the following compounds in the increasing order of their acid strength and account for it.  $HCOOH$ ,  $ClCH_2COOH$ ,  $CH_3COOH$ .
22. How will you synthesize succinic acid from ethylene bromide?

## PART – C

Answer any FOUR questions:

(4 x 10 = 40)

23. a. Explain why allyl chloride is more reactive than vinyl chloride.  
b. Discuss the Mechanism of  $E1$  and  $E2$  reactions of alkyl halides.
24. a. Give the mechanism of Reimer Tiemann reaction and Kolbe's reaction.  
b. How is phenolphthalein prepared from phenol?
25. a. What is paraldehyde? How is it prepared from acetaldehyde?  
b. What are geometrical isomers? Give examples. How will you distinguish between maleic acid and fumaric acid?

**26. a. How is ethylene oxide prepared?**

**b. How does diethyl ether react with**

**i.  $\text{H}_2\text{O}/\text{H}^+$     ii.  $\text{PCl}_5, \Delta$ .**

**c. How does ethylene oxide react with the following reagents**

**i.  $\text{H}_2\text{O}/\text{H}^+$     ii.  $\text{HBr}$     iii.  $\text{CH}_3\text{OH}$     iv.  $\text{NH}_3$ .**

**27. i. How will you distinguish between 2-Pentanone and 3-Pentanone?**

**ii. Give the mechanism of addition of  $\text{HCN}$  to acetaldehyde.**

**iii. Compound (A),  $\text{C}_4\text{H}_{10}\text{O}$  undergoes oxidation to give (B),  $\text{C}_4\text{H}_8\text{O}$ . (B) forms oxime, but does not give Tollen's test. (B) reacts with  $\text{I}_2$  and  $\text{KOH}$  to give Iodoform. Deduce the structure of (A) and (B).**

**28. a. Write notes on Clemmensen reduction and Wolff-Kishner reduction.**

**b. How will you synthesize cinnamic acid using Perkin's and Knoevenagel reactions.**

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