

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034**B.Sc. DEGREE EXAMINATION – CHEMISTRY**

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THIRD SEMESTER – APRIL 2018

CH 3506 / CH 3502– ORGANIC FUNCTIONAL GROUPS - I

Date: 05-05-2018

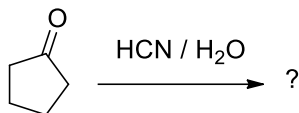
Dept. No.

Max. : 100 Marks

Time: 01:00-04:00

PART – A**Answer all the questions:****(10 x 2 = 20 marks)**

- Classify the following halides into primary, secondary, tertiary, and aryl halides:
a) 2-bromobutane, b) 2-methyl-1-bromopropane, c) 2-methyl-2-chloropropane, d) iodobenzene
- How will you convert nitrobenzene into chlorobenzene?
- Which of the following will not undergo haloform reaction?
ethanol, methanol. Why?
- Complete the reaction.



- How will you prepare phenyl methylether from phenol using Williamson's synthesis?
- Give the IUPAC names of diethyl ether and anisole.
- Write about the polarity of carbonyl groups.
- Draw the structure of the following compounds: a) benzyl ethyl ketone b) 4-oxo pentanal.
- Arrange the following acids in terms of increasing acid strength and give reasons.
HCOOH, ClCH₂COOH, Cl₂CHCOOH, Cl₃CCOOH
- Predict the products formed when benzoic acid reacts with
a) sodalime b) ethanol in the presence of dil. H₂SO₄.

PART – B**Answer any eight questions:****(8 X 5 = 40 marks)**

- Explain the S_N1 mechanism with a suitable example.
- State Saytzeff's and Hoffmann's rules with examples.
- Explain the mechanism of Kolbe's reaction.
- How will you prepare 2-Propanol and Tertiary butyl alcohol using Grignard reagent?
- Write the products obtained when ethylene oxide reacts with
a) CH₃OH / H⁺ b) NH₃ c) H₂O / H⁺
- Explain Williamson's ether synthesis with its mechanism.
- What happens when diethyl ether is treated with the following reagents?

a) Excess of HI b) Con.H₂SO₄

18. Explain the mechanism of Norrish type II reaction.
19. Write the mechanism of Reformatsky reaction.
20. What is benzoin condensation? Explain its mechanism.
21. What is transesterification? Explain with an example.
22. Give any two methods of preparation of succinic acid.

PART – C

Answer any four questions:

(4 X 10= 40 marks)

23. a) Describe E₁ mechanism with an example.

b) 2, 4 –dinitrochlorobenzene undergoes nucleophilic substitution much faster than chlorobenzene. Explain your answer. **(5+5)**

24. a) Phenol undergoes nitration forming ortho and para nitro phenols. Explain the formation of these products with mechanism. (5)

b) Account for the following : **(2.5+2.5)**

i) Phenol does not undergo Friedl-Crafts' reaction.

ii) Alcohol possesses higher boiling point than the hydrocarbons of similar molar mass.

25. a) Describe alkoxymercuration and demercuration procedure for the synthesis of ethers with an example. **(4)**

b)How are the following compounds prepared from ethylene oxide?

i) butan-1-ol ii) 2-methoxy ethanol. **(3+3)**

26. a) Provide any one method to prepare the following compounds.

i) succinic acid ii) cinnamic acid **(3+3)**

b) Give the mechanism of alkaline hydrolysis of ester. **(4)**

27. Compound A with molecular formula C₇H₆O on treatment with con.NaOH gives compounds B and C. B on oxidation gives back A. A answers Tollens test but not Fehing's test. Compound C on acidification gives D (C₇H₆O₂). D gives brisk effervescence with aqueous NaHCO₃ and reaction with ethanol in the presence of dil.H₂SO₄ gives a sweet smelling compound E. Identify A, B, C, D and E and write the reactions involved.

28. a) Explain Wittig reaction with mechanism.

b) Arrange the following in the order specified and give reason.

benzoic acid, 4-nitro benzoic acid, 4-methoxy benzoic acid, 2, 4-dinitro benzoic acid

(decreasing acidic strength) **(5+5)**
