TB144100B **Reg. No: .....**

Name: .....

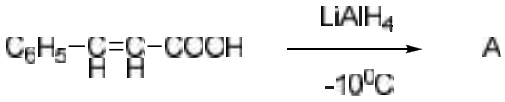
B. Sc. DEGREE (C.B.C.S.S.) EXAMINATION, MARCH 2017
(Supplementary – 2014 Admission)
SEMESTER IV – CORE COURSE (CHEMISTRY)
CHE4BOC – BASIC ORGANIC CHEMISTRY - I

Time: Three Hours **Maximum Marks: 60**

PART A

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

1. Alcohols have higher boiling points than corresponding ethers and alkanes of similar molecular weight. Why?
2. Three membered epoxides are unstable, why?
3. What is Mannich base? Give one example.
4. Identify the product A formed in the following reaction



5. What is the product formed when CH_3MgBr is treated with carbon dioxide?
6. What are enamines?
7. Naphthalene is relatively less aromatic than benzene, why?
8. Identify the product formed in the oxidation of anthracene by chromic acid in presence of concentrated H_2SO_4.

(8x1=8)

PART B

II. Answer any six questions. Each question carries 2 marks.

9. How will you synthesize tertiary butyl alcohol from isopropyl alcohol?
10. Arrange the following compounds in the decreasing order of reactivity towards nucleophilic addition. Give explanation for your answer.

    R_2CO, RCHO and HCHO
11. Does formaldehyde undergo aldol condensation reaction? Justify your answer.
12. Arrange the following in the increasing order of acidity.

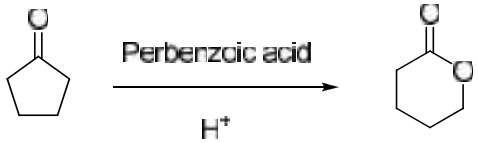
    $(CH_3)_3C$-COOH, Cl_3CCOOH and CH_3-COOH
13. What are coumarins? How coumarin is prepared?
14. Give one chemical test to distinguish between maleic acid and fumaric acid.
15. Discuss the use of semicarbazides for the identification of aldehydes and ketones.
16. What are ureides? Give an example.
17. What is Reformatsky reaction? Give any one application.
18. Explain, why electrophilic substitution in naphthalene takes place at the α - position?

(6x2=12)

PART C

III. Answer any four questions. Each question carries 4 marks.

19. Write a note on Pinacol – Pinacolone rearrangement. Give its mechanism and explain the migratory aptitude of the groups.
20. Describe the Ziesels method for the estimation alkoxy group in ethers.
21. Explain, why an electron donating group in aromatic aldehydes decreases the rate of Claisen – Schmidt reaction, whereas an electron – withdrawing group enhances the reaction rate.
22. What is Bayer – Villiger oxidation? Give a suitable mechanism for the following conversion.



23. How will you prepare adipic acid commercially? Give its synthetic importance.
24. What do you mean by decarboxylation? Give its mechanism.

(4x4=16)

PART D

IV. Answer any two questions. Each question carries 12 marks.

25. a) How will you distinguish primary, secondary and tertiary alcohols by
    i) Oxidation ii) reduction iii) Lucas test
    b) Write a note on the preparation and properties of picric acid.
26. a) Write a note on Wittig reaction. Explain its mechanism and applications.
    b) Explain i) Wolf – Kishner reduction ii) Cannizzaro reaction
27. a) Explain the preparation and chemical properties of acid chlorides.
    b) How can benzene sulphonyl chloride be prepared? Give the details and reactions of Hinsberg's method for the separation of primary, secondary and tertiary amines.
28. a) A neutral compound $C_5H_{10}O_2$ was hydrolyzed to yield two new products A and B. Compound B gave a positive idoform test reaction, reacted readily with Lucas reagent and on treatment with conc. H_2SO_4 gave a propene. Give the name and structure of the original compound, product A and product B.
    b) Starting from malonic ester, outline the synthesis of
    i) Isobutyric acid ($(CH_3)_2CHCOOH$) ii) Barbituric acid
    iii) Aceto acetic acid (CH_3COCH_2COOH)

(2x12=24)