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Reg. No.....

Name.....

B.Sc. DEGREE (C.B.C.S.S.) EXAMINATION, MAY 2024

Fourth Semester

Core Course—BASIC ORGANIC CHEMISTRY—I

(Common for B.Sc. Chemistry Model I, Model II, B.Sc. Petrochemicals and B.Sc. Chemistry Environment and Water Management)

[2013—2016 Admissions]

Time : Three Hours Maximum Marks : 60

Part A

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

1. What is hydrogen bonding ?
2. Why is alpha hydrogen acidic in aldehydes ?
3. Why is DMF used as a solvent in Wittig reaction ?
4. Why is acetal a good proecting group ?
5. What is the importance of acid anhydrides ?
6. How semi carbazide is prepared ?
7. Why is keto-enol tautomerism important ?
8. What is the use of anthraquinone ?

(8 × 1 = 8)

Part B

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

9. Give a method to prepare catechol.
10. What is Claisen rearrangement ?
11. Why aliphatic ketones are more reactive than aromatic ketones ?
12. How will you convert acetone to propane using hydrazine ? Write down reaction conditions.
13. What is the reaction of epoxide with HI ?
14. How urea is manufactured ? What are the uses of urea ?
15. Why *p*-nitrobenzoic acid is a stronger acid than *m*-nitrobenzoic acid ?

Turn over

16. Discuss the basicity of guanidine.

17. What is the advantage of Reformatsky reaction ?

18. What is the structure of phenanthrene ? Discuss its main reaction.

(6 × 2 = 12)

Part C

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

19. Compare the acidity of 2-nitrophenol and 2-aminophenol.

20. Discuss the mechanism of Mannich reaction.

21. Discuss the methods of formation of malonic acid. What are its main reactions ?

22. Compare the acid strengths of p—NO_2—C_6H_4—COOH, p—Cl—C_6H_4—COOH and p-HO—C_6H_4—COOH.

23. What is a Grignard reagent ? What is the mechanism of the Grignard reaction ?

24. Briefly explain the synthetic applications of cyanoacetic ester.

(4 × 4 = 16)

Part D

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

25. (a) Discuss the mechanism of Lederer-Mannase reaction.

    (b) Discuss the method to distinguish between Secondary and Tertiary alcohols.

26. (a) Discuss the mechanism of Aldol condensation.

    (b) How $NaBH_4$ is prepared ? Discuss the mechanism of its reducing action.

27. (a) Describe the steps involved to convert propionic acid to acetic acid.

    (b) Describe the formation and chemical reactions of antranilic acid.

28. Explain the preparation and reactions of p-toluene sulfonyl chloride. What is its use ?

(2 × 12 = 24)