

B.Sc. DEGREE (C.B.C.S.S.) EXAMINATION, MARCH 2015**Fourth Semester****Core Course—BASIC ORGANIC CHEMISTRY—I**

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

[2013 Admissions]

Time : Three Hours

Maximum : 60 Marks

Part A

Answer all questions.

Each question carries 1 mark.

1. Give the structure of picric acid.
2. What are the chemicals used in the Williamson synthesis of ethers ?
3. What is an aldol ?
4. Which is more acidic, acetic acid or chloroacetic acid ? Why ?
5. Give one example to show the basic nature of urea.
6. What is Reformatsky reaction ?
7. Write the enol form of ethyl aceto acetate.
8. What is the reaction of Naphthalene with O_3 ?

(8 × 1 = 8)

Part B

Answer any six questions.

Each question carries 2 marks.

9. Explain the importance of lead tetra acetate.
10. Explain Lucas test.
11. What are the compounds to be reduced using $NaBH_4$? Give any one reaction with mechanism.
12. What is Wittig Reaction ? Give its importance.
13. How is carbonyl group directly converted into methylene group ? Explain.
14. Rank the following acids in order of their increasing acidity. Benzoic acid, hydroxy benzoic acid and phenol. Give reasons for the order.
15. How will you convert benzaldehyde to cinnamic acid ? Explain.
16. Explain how citric acid reacts with :
 - (a) HI and
 - (b) Conc. H_2SO_4

Turn over

17. What is meant by active methylene group? Give the structure of malonic ester.
18. Give one synthetic application of Grignard reagent.

(6 × 2 = 12)

Part C

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

19. How would you distinguish between the following pairs :—
(a) Ethyl alcohol and methyl alcohol ;
(b) 1-pentanol and 3-pentanol.
20. With suitable example explain the use of acetal as protecting group.
21. Which is more acidic, sulphonic acid or carboxylic acid? Why?
22. Describe the method of preparing guanidine.
23. What is the reaction of an epoxide ring with trace amount of acids like H_2SO_4 or HClO_4 . Give equation with mechanism.
24. Write note on Mannich reaction.

(4 × 4 = 16 marks)

Part D

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

25. (a) Explain how will you distinguish between 1°, 2° and 3° alcohols.
(b) Effect of acidity of phenol with substituents.
26. (a) What is Knoevenagel condensation? Give mechanism.
(b) Explain :
(i) Baeyer-Villiger oxidation ; (ii) Cannizzaro's reaction.
27. (a) Explain the effects of substituents on acid strength of aliphatic carboxylic acids.
(b) Briefly explain :
(i) preparation, properties of benzene sulphonyl chloride ;
(ii) preparation and importance of acetic anhydride.
28. (a) What are the synthetic uses of :
(i) malonic ester ; (ii) Cyano acetic ester.
Explain with examples.
- (b) Starting from acetic acid, how would you prepare :
(i) methane ; (ii) Acetamide ;
(iii) ethyl alcohol ; (iv) Acetyl chloride.

(2 × 12 = 24)