

V Semester B.Sc. Examination, October/November 2012  
(Semester Scheme)  
CHEMISTRY (Paper – V)  
Organic Chemistry

Time : 3 Hours

Max. Marks : 60

**Instructions:** 1) The question paper has **two** Parts.  
2) **Both** Parts should be answered. Structure and equations are to be given **wherever** necessary.

## PART – A

Answer **any six** of the following questions. **Each** question carries **two** marks.

(6×2=12)

1. Give the Haworth structure of sucrose.
2. What is the physiological action of
  - i) Morphine
  - ii) Cocaine ?
3. What are chromophores and auxochromes ?
4. Draw the E and Z isomers of 1, 4 - butenedioic acid.
5. What are antipyretics ? Give an example.
6. Give a chemical evidence to prove the presence of five hydroxyl groups in glucose.
7. Draw the structures of the two enantiomers of glyceraldehyde.
8. What are anomers ? Give an example.
9. What is nuclear shielding and deshielding in NMR spectroscopy ?
10. Compare the basicity of pyrrole and pyridine.

P.T.O.



## PART – B

Answer **any eight** of the following questions. **Each** question carries **six** marks.

(8×6=48)

11. a) Write the general characteristics of alkaloids.  
b) How is alizarin synthesised ? (3+3)
12. a) How is glucose converted into fructose ? Give equations.  
b) Give the structure of menthol and indicate the isoprene units. (4+2)
13. a) Discuss the aromaticity of pyrrole  
b) Explain Sandmeyer's reaction with an example. (4+2)
14. a) Write a note on the optical activity in diphenyl derivatives.  
b) Give the structure of mesotartaric acid showing the plane of symmetry. (4+2)
15. a) Draw the structures of the geometrical isomers of 1, 4 - dimethylcyclohexane.  
Which form is more stable ? Why ?  
b) Give any one evidence to show that maleic acid is an E isomer and fumaric acid a Z isomer. (4+2)
16. a) With an example explain the biochemical method of resolution of a racemic mixture. What are the disadvantages of this method ?  
b) Mention the necessary condition for a compound to exhibit optical isomerism.  
Give an example. (4+2)
17. a) Compare the basic nature of methylamine, dimethylamine and trimethylamine.  
b) Give the skraup synthesis of quinoline. (3+3)

18. a) Explain how quinoline and isoquinoline undergo nitration. Give equations.  
b) Give the structure of limonine and its use. (4+2)
19. a) What is mutarotation ? Give the mechanism.  
b) Define chemical shift. Why is TMS used as reference compound in NMR spectroscopy ? (4+2)
20. a) Outline the synthesis of  $\alpha$  -Terpineol.  
b) Write the structure of nicotine and name the heterocyclic rings present in it. (4+2)
21. a) Sketch the NMR spectra of bromoethane indicating the multiplicity of the various peaks.  
b) Distinguish between stretching and bending modes of vibration. (4+2)
22. a) What are antibiotics ? Give the synthesis of sulphanilamide.  
b) What are the advantages of detergents over soaps ? (4+2)

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