

M.Sc. (Previous) Degree Examination
August 2009
Directorate of Correspondence Course
(Freshers)

APPLIED CHEMISTRY
DEC.APP.CHEM.1.02 : Organic Chemistry

Time : 3 Hours

Max. Marks : 85

- Note :**
1. Answer any ELEVEN question from Part-A, THREE questions from Part-B and any THREE full questions from Part-C.
 2. Figures to the right indicate marks.

PART-A

1. Answer any ELEVEN of the following. 11x2=22
- a) Explain stability of carbanions.
 - b) What are non-classical carbocations?
 - c) Give two differences between enantiomers and diastereomers.
 - d) Write the possible optical isomers for tartaric acid.
 - e) Discuss the mechanism of S_Ni reaction.
 - f) Explain the aromaticity of tropylium cation.
 - g) Write the mechanism of sulphonation of benzene.
 - h) Explain Markownikoff's rule with an example.
 - i) What is Chugaev reaction?
 - j) Give one method of synthesis of isoquinoline.
 - k) Between thiophene and furan which one is more aromatic and why?
 - l) Arrange the following acids in the increasing order of their acid strength:
 $ClCH_2COOH$, CH_3COOH , Cl_3CCOOH and $Cl_2C(R)COOH$
 - m) Outline the azlactone synthesis of amino acids.
 - n) What is anomeric affect?
 - o) Name any two carboxylic group blocking agents and used in the peptide synthesis.

PART-B

- Answer any THREE of the following questions. 3x8=24
2.
 - a) Discuss the formation and stability of carbocations.
 - b) Explain optical isomerism exhibited by biphenyl compounds. 4+4
 3.
 - a) Describe S_N1 reaction with mechanism.
 - b) What are annulenes? Discuss its aromaticity. 4+4

4. a) Discuss the mechanism of Friedel-Crafts acylation.
b) Explain with an example Saytzeff rule of elimination. 4+4
5. a) Outline Skraup synthesis of quinoline.
b) Discuss the effect of substituents on the strength of organic bases with appropriate examples. 4+4
6. a) Outline the synthesis of any one dipeptide.
b) How the configuration of glucose is established? 4+4

PART-C

Answer any THREE of the following questions. 3x13=39

7. a) Discuss the primary and secondary structure of proteins.
b) Elucidate the structure of sucrose. 7+6
8. a) Write any two methods each for the synthesis of thiophene and pyrrole.
b) What is Chichibabin reaction? Write the product obtained in the case of pyridine. 8+5
9. a) Explain the mechanism of E1 reaction and predict the stereochemistry involved in it.
b) Discuss the mechanism of nitration of i) Toluene ii) Nitrobenzene. 7+6
10. a) Write a note on conformational analysis of cyclohexane.
b) How can be *cis* and *trans* isomers distinguished by physical and chemical methods? 7+6
11. a) What are carbenes? How are they generated? Discuss any one reaction involving carbenes.
b) Write a note on effect of solvent and nature of substrate on S_N1 and S_N2 reactions. 7+6

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