MAR IVANIOS COLLEGE (AUTONOMOUS)
THIRUVANANTHAPURAM

Reg. No. :…… **Name : ……**

Third Semester B.Sc. Degree Examination, November 2015
First Degree Programme under CBCSS
Complementary Course: Chemistry – III (for Zoology)
AUCH331.2e: Organic and Biophysical Chemistry I

Time: **3** Hours Max. Marks: **80**

SECTION – A

*Answer **ALL** questions in a word or one or two sentences.*

1. D – configuration of glyceraldehyde is _____.
2. Homolytic bond fission leads to the formation of _____.
3. The process of separation of racemic mixtures in to enantiomers is called _____.
4. The selection rule for vibrational Raman spectrum of a diatomic molecule is _____.
5. Name the heterocyclic residue present in coniine.
6. Give the chemical name of vitamin C.
7. Give the name of a reducing sugar.
8. Name two water soluble vitamins.
9. Acetic acid is a _____acid than formic acid.
10. The more stable conformation of ethane is _____.

(10 × 1 = 10 Marks)

SECTION – B

*Answer any **EIGHT** questions, not exceeding a paragraph.*

11. Which is more acidic, acetic acid or monochloroacetic acid ? Why ?
12. Explain hyperconjugation with an example.
13. What is peroxide effect ?
14. Explain the rule of mutual exclusion.

15. Explain racemization with an example.
16. What is epimerization ?
17. Give one method for the preparation of pyridine.
18. How is nicotine isolated from tobacco leaves ?
19. What are artificial hormones ?
20. Which is more basic pyrrole or pyridine ? Why ?
21. What are the functions of bile acids ?
22. Give the structural formulae of ribose and deoxyribose.

(8 × 2 = 16 Marks)

SECTION – C

*Short essay type : Answer any **SIX** questions.*

23. Explain mesomeric effect with an example.
24. Write briefly on optical isomerism due to restricted rotation with examples.
25. How is glucose converted to fructose and vice versa ?
26. Write the principle of NMR spectroscopy.
27. Explain Hoffmann exhaustive methylation.
28. Depict the pyranoside structure of glucose.
29. Illustrate stokes and antistokes lines in Raman spectrum.
30. Write notes on geometrical isomerism exhibited by aldoximes and ketoximes.
31. How pyrrole is commercially prepared ? Give its important electrophilic substitution reactions.

(6 × 4 = 24 Marks)

SECTION – D

*Long essay type : Answer any **TWO** questions.*

32. i). Discuss the mechanisms of S_N1 and S_N2 reactions.
    ii). Explain Markownikov's rule.
33. i). Explain quantum theory of Raman spectrum.
    ii). Write notes on chemical shift and spin – spin splitting.
34. i). Discuss the different conformations of cyclohexane.
    ii). Write notes on asymmetric synthesis.
35. Discuss the source, isolation, physiological action and deficiency diseases caused by Vitamins A, B, C and D.

(2 × 15 = 30 Marks)

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