MAR IVANIOS COLLEGE (AUTONOMOUS) THIRUVANANTHAPURAM

Reg. No. :………………… Name :…………………

First Semester Career Related B.Sc. Degree Examination, November 2016

First Degree Programme under CBCSS

Complementary Course: Biochemistry – I (for Botany and Biotechnology)

AUBB131: Introduction to Biochemistry

(*Common for **Regular** – 2016 Admn. and **Improvement** – 2015 Admn.*)

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

SECTION – A

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

1. State the Bronsted theory of acids and bases.
2. Define normality.
3. Define isotonic and hypertonic solutions.
4. What are emulsions ? Give examples of emulsifying agents.
5. Define entropy and enthalpy.
6. State Beer – Lambert's law.
7. Write the principle of centrifugation technique.
8. Define partition coefficient.
9. How is 7% NaOH prepared ?
10. What is mean by a glycosidic bond ?

 (10 × 1 = 10 Marks)

SECTION – B

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

11. Calculate the pH of a 0.001M solution of HCl.
12. Distinguish between molality and molarity.
13. What is diffusion and write its biological significance.
14. State Vant Hoff's law of osmotic pressure.

 P.T.O.

15. What are colloids ?
16. Explain the term Gibbs free energy.
17. What is molar extinction coefficient ?
18. Comment on the structure of water.
19. What are the advantages of TLC over paper chromatography ?
20. Write note on R_f value.
21. What are the different functional groups in biomolecules ?
22. Write note on Watson – Crick base pairing.

(8 × 2 = 16 Marks)

SECTION – C

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

23. Briefly discuss the buffers in biological systems.
24. Draw and discuss the titration curve of a weak acid.
25. Write the biological importance of osmosis and surface tension.
26. Explain Donnan membrane equilibrium.
27. Write note on energy changes in biochemical reactions.
28. Write note on the components and working of spectrophotometer.
29. Explain isopycnic centrifugation.
30. Explain the principle and applications of gel filtration chromatography.
31. Discuss the working principle of pH meter.

(6 × 4 = 24 Marks)

SECTION – D

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

32. Derive Henderson Hasselbalch equation for a weak acid.
33. What are colloids ? Describe the classification and properties of colloids.
34. Discuss the principle, procedure and applications of differential centrifugation.
35. Discuss the principle, procedure and applications of SDS – PAGE.

(2 × 15 = 30 Marks)

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