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| **ST. JOSEPH’S COLLEGE (AUTONOMOUS), BANGALORE-27** | | | | | | |
| **Mid Semester Examination January 2019**  **M.Sc. CHEMISTRY - IV SEMESTER** | | | | | | |
| **Applied Analysis** | | | | | | |
| **Time- 75 min** | |  | **Max Marks-35** | | |  |
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**Part A**

Answer any three out of four questions. Each question carries 2 marks. 2x3=6

1. What are the different types of helices seen in a protein?
2. How does metal detoxification occur in the biological system?
3. What are the topological difference between Type I and Type II b-bends?
4. Why are copper containing proteins intensity blue in colour?

**Part B**

Answer any two out of three questions. Each question carries 12 marks 12x2=24

5. a) How is the amino acid composition of a protein determined? What are advantages and disadvantages of the different methods?

b) Enumerate in brief how you would go about purifying a protein from mango seeds?

6. a) Discuss the oxygen saturation curve of hemoglobin and myoglobin

b) Explain how electron transport takes place in photosystem I and II

7. a) Explain with reactions how Edman degradation was adapted to the automatic sequenator?

b) What are different types of cytochromes? Discuss the biological role of active site of cytochrome-C

**Part C**

Answer one out of the two questions. Each question carries 5 marks 5x1=5

8. A small peptide was completely hydrolyzed to yield the following set of amino acids; Ala + Arg + Gly + 2 Met + Lys + Ser + Val

In addition the peptide was subject to the following tests with the results given.

Sanger Reagent - DNP Gly and ,-DNP Lys

Carboxypeptidase A - a) Ser b) All the rest Cyanobromide - a) Ala + Gly + Lys + Met b) Met + Val c) Arg + Ser

Chymotrypsin - Nothing Released

Trypsin - a) Ala + Gly + Lys b) Arg + 2 Met + Val c) Ser

What is the order of amino acids in the peptide chain?

* The (H+-K+) ATPase secretes H**+** at a concentration of 0.18 M from the cells that have an internal pH of 7. What is the G required for the transport of 1mole H**+** under these conditions? Assuming that the G for ATP hydrolysis is -31.5 KJ. Mol-1 under these conditions and the membrane potential 0.06V inside is negative, how much ATP must be hydrolysed per mole of H+ transported in order to make this transport exergonic?