

B.Sc. S.Y. CBCS Pattern Semester-III  
**USBCT-C06 - Biochemistry Paper-II : Biophysical and Biochemical Techniques-I**

P. Pages : 2

Time : Three Hours



**GUG/W/23/11597**

Max. Marks : 50

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Notes : 1. All questions are compulsory and carry equal marks.

1. Derive the Handerson-Hasselbalch equation and describe the mechanism of action of buffer.

**OR**

- a) Discuss the bicarbonate buffer system of blood.
- b) Write a note on Glass electrode.
- c) Explain how the pKa of acid is determine by titration.
- d) Discuss the titration curve of weak acids.

2. Describe the principle, instrumentation & applications of flame photometer.

**OR**

- a) State Beer's law. What are the deviations of Beer's law?
- b) What are auxochromes? Explain the of absorption and intensity shift due to auxochrome.
- c) Draw a schematic labelled diagram of optical layout of spectrofluorimeter.
- d) Write a note on photomultiplier.

3. Describe the ascending paper chromatography technique with its application.

**OR**

- a) Explain the various partition forces in chromatography.
- b) Explain the concept of plates in column chromatography and column efficiency.
- c) What is isocratic and gradient elution technique?
- d) Discuss the principle of gel filtration chromatography.

4. Describe the technique of affinity chromatography.

**OR**

- a) What is specific & nonspecific elution?

- b) Explain the principle of ion exchange chromatography.
- c) Write a note on Amino acid analyser.
- d) Draw the schematic diagram of HPLC.

5. Attempt **any ten** of the following. (1 mark each)

- a) Define buffers.
- b) What is relationship between pKa and buffering zone?
- c) Define buffer capacity.
- d) What is Lambert's Law?
- e) What is nephelometry?
- f) What is the relationship between optical density and percent transmission?
- g) What is meant by liquid/liquid chromatography?
- h) Name the two phases in column adsorption chromatography.
- i) What is meant by exclusion limit of a gel?
- k) What is GCMS?
- l) Give two examples of ion exchanger.

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