Seat No. : _____

DD-106

December-2022

B.Sc., Sem.-III

CC-201 : Biochemistry

(Biophysics and Instrumentation)

Time : 2:30 Hours] **[Max. Marks : 70**

Instructions : (1) All Questions in Section-**I** and Section-**II** is COMPULSORY and carry equal marks.

(2) Illustrate your answers with neat diagrams wherever necessary.

SECTION - I

1. (A) Define :

(1) Base

(2) pOH

(3) Ampholyte

(4) Buffer

(5) Kw

(6) Acid **6**

(B) Define buffer capacity. Discuss the factors affecting it with examples. **8**

OR

(A) Discuss the principle behind pH meter. **8**

(B) Discuss water as universal solvent **6**

2. (A) Define Viscosity. Give its units. Discuss its physiological importance. **8**

(B) What is Donnan membrane effect ? Explain. **6**

OR

(A) Define surface tension. Give its relationship of surface tension with surface area and surface energy. Name and give the formula of any two methods to measure surface tension. **6**

(B) Explain counter current distribution. Discuss the physiological importance of osmosis and osmotic pressure. **8**

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3. (A) State principle, working and applications of HPLC. 9

(B) List detectors used in Gas Chromatography and explain anyone. 5

OR

(A) What is the principle behind electrophoresis ? Discuss factors affecting electrophoresis. 7

(B) State principle and working of SDS - PAGE 7

4. (A) Draw, label and discuss the parts and working of a spectrophotometer. Discuss its applications. 14

OR

(A) State and derive Lambert – Beer's laws. 6

(B) Write a note on : 8

(1) Applications of spectrofluorometer

(2) Filters

SECTION – II

5. *Attempt any* **Seven** out of the following : 14

(1) Write HendersonHassel Balch equation. Give one importance of the equation.

(2) Draw and label glass electrode.

(3) Calculate the pH of a solution whose H+ ion concentration is 0.1 moles per litre. What is its pOH value ?

(4) State Vant Hoff laws of Osmotic Pressure.

(5) State Gibbs - Thomson principle.

(6) Give any two physiological importance of adsorption.

(7) Define Rf. What is the stationary phase in paper chromatography ?

(8) What is the role of Ammonium per sulphate and TEMED in PAGE ?

(9) State two applications of GC.

(10) Define Fluorescence.

(11) Derive an equation to show relationship between O.D and % Transmission.

(12) State any two differences between Colorimeters and Spectrophotometers.

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