

Seat No. : \_\_\_\_\_

**JA-104**  
**January-2021**  
**B.Sc., Sem.-III**  
**201 : Biochemistry**

**Time : 2 Hours]**

**[Max. Marks : 50**

**Instructions :** (1) All Questions carry equal marks.  
(2) Attempt any **three** from Q. 1 to Q. 8 only.

1. (i) Define : 7  
(1) pH  
(2) pOH  
(3) Acid  
(4) Base  
(5) Ampholyte  
(6) pKa  
(7)  $K_w$   
(ii) Derive Henderson-Hasselbalch equation. 7
2. (i) Discuss buffer capacity with examples. 10  
(ii) Discuss water as a biological solvent. 4
3. Define Osmosis and Osmotic pressure. Explain one method to measure Osmotic Pressure.  
State Vant Hoff laws of Osmotic Pressure. 14
4. (i) Discuss the factors affecting Viscosity. 7  
(ii) Discuss the physiological importance of Surface Tension. 7
5. Discuss the principle, composition, working and advantages of PAGE. 14
6. Discuss the principle, procedure, advantages and disadvantages of TLC. 14

7. Discuss the parts, working and applications of a Spectrophotometer. 14
8. (i) State and derive Lambert-Beer's law. 7  
(ii) Discuss the applications of Spectrofluorometer. 7
9. Attempt any **eight** : 8
- (1) What are buffers ? Give one example.
  - (2) Name the electrodes of a pH meter.
  - (3) Calculate the pH of a solution with H<sup>+</sup> ion concentration = 0.0001 moles/litre.
  - (4) Name the physiological buffers present in blood.
  - (5) Define Surface tension.
  - (6) What are the units of Viscosity ?
  - (7) What is Gibbs Donan effect ?
  - (8) Define adsorption.
  - (9) Define R<sub>f</sub>
  - (10) Name the stationary and mobile phase of paper chromatography.
  - (11) Name the tracking dye used in gel electrophoresis.
  - (12) What is the principle of electrophoresis ?
  - (13) Why do we use a blank tube in Colorimeter ?
  - (14) What is fluorescence ?
  - (15) Give any one important difference between Colorimeter and Spectrophotometer.
  - (16) Name the monochromators used in Spectrophotometer.
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