BBC31 — BIOCHEMICAL TECHNIQUES — I

Time : Three hours   Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. Differentiate normality from molarity.

2. How many millimoles of substance X is present in 100 ml of 1 M solution?

3. Calculate the pH and pOH of a solution containing 1×10^{-6} H^+ ions.

4. What is Sorenson's pH scale?

5. Are glass electrodes different from hydrogen electrode?

6. What is pH?

7. Define partition co-efficient.

8. What is adsorption?

9. How will you prepare a gradient for centrifugation?

10. What are fixed angle rotors?

SECTION B — (5 × 5 = 25 marks)

Answer ALL the questions.

11. (a) Outline the applications of osmotic pressure.

Or

(b) Narrate the concept of isotonic, hypotonic and hypertonic solutions.

12. (a) Derive Henderson Hasselbalch equation for blood.

Or

(b) Discuss about the isohydric transport of CO_2 in blood.

13. (a) How will you determine the pH of the solution using hydrogen electrode?

Or

(b) List the applications of hydrogen electrode and glass electrode.

14. (a) Draw a self explanatory diagram for separation of proteins in an ion exchange column.

Or

(b) Enumerate the applications of molecular exclusion chromatography.

15. (a) Explain the methodology to isolate nucleus and mitochondria from liver homogenate.

Or

(b) Define sedimentation rate, Svedberg unit, and angular velocity.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Discuss about any five units of measurements of solutes in solution.

17. Bring out the role of buffers in biological systems.

18. Give the instrumentation and applications of Clark oxygen electrode.

19. Write elaborately on the procedure to separate sugars using paper chromatography.

20. How will you determine the molecular weight of a protein using ultracentrifugation?

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