FIRST SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2017

(CUCBCSS—UG)

Complementary Course

BCH 1C 01—BIO CHEMISTRY–I

Time : Three Hours   Maximum : 64 Marks

Section A

*Answer **all** questions.*
Each question carries 1 mark.

1. Name the plasma protein involved in maintaining osmotic balance.

2. Two solutions with equal osmotic pressure are called ———— solutions.

3. Name the major carbohydrate content of seminal fluid.

4. Name the major protein in milk.

5. Name a technique commonly used for the quantification of hormone ————.

6. Name a natural anticoagulant.

7. The scattering of light by dispersed phase in a colloidal solution is called ————.

8. What is the pH of 0.1M KOH ?

9. The difference between plasma and serum is the presence of ———— in plasma.

10. Name the law behind the working of spectrophotometer.

$(10 \times 1 = 10 \text{ marks})$

Section B

*Answer any **seven** questions.*
Each question carries 2 marks.

11. State vant Hoff's law of osmotic pressure.

12. Expand SDS-PAGE, TEMED and APS.

13. List out the different blood buffers.

14. What is meant by hypertonic and hypotonic solution ?

15. Define geometrical isomerism with example.

Turn over

16. Illustrate with example substitution and addition reaction.

17. What are emulsions and emulsifying agents ?

18. What is zeta potential ?

19. Differentiate between electrolytes and non-electrolytes. Give example.

20. What is a buffer? Write the components required to prepare an acidic buffer.

$$(7 \times 2 = 14 \text{ marks})$$

Section C

Answer any **four** *questions.*
Each question carries 5 marks.

21. Differentiate between true solution, coarse suspension and colloids.

22. Give a brief account on the composition and functions of bile.

23. Explain immunoelectrophoresis.

24. Calculate the osmotic pressure in millimeters of mercury at 20°C of a solution of naphthalene ($C_{10}H_8$) in benzene containing 28g of naphthalene per liter of the solution ?

25. Explain Donnan-membrane equilibrium and its biological significance.

26. Write Henderson-Hasselbalch equation for acidic and basic buffer and calculate the pH of a buffer solution containing 0.20 moles/liter sodium acetate and 0.15 moles/liter acetic acid. Ka for acetic acid is 1.8×10^{-5}.

$$(4 \times 5 = 20 \text{ marks})$$

Section D

Answer any **two** *questions.*
Each question carries 10 marks.

27. Write an essay on the properties and applications of colloids.

28. Give a detailed account on the principle and application of gel filtration chromatography.

29. Give a detailed account of the mechanism involved in blood clotting.

30. Write a essay on principle and applications of HPLC.

$$(2 \times 10 = 20 \text{ marks})$$