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First Semester B.Sc. Degree Examination, November/December 2019

(CBCS – Semester Scheme – 2018-19 and Onwards – Freshers & Repeaters)

Biochemistry

Paper I – BIOCHEMISTRY

Time : 3 Hours]　　　　　　　　　　　　　　　　　　　　　[Max. Marks : 70

Instructions to Candidates :

1) This paper is for the students of new syllabus : 2014-15
2) The question paper has two Parts : Part A and Part B
3) Answer any Eight questions from Part A
4) Answer any Nine questions from Part B.

PART – A

Answer any **EIGHT** of the following questions. Each question carries **2** marks :

(8 × 2 = 16)

1. Differentiate between precision and accuracy with an example.

2. What is electromagnetic spectrum?

3. Draw the shape of s and p orbitals.

4. What is Fajan's rule?

5. Define bond order.

6. What is mass defect?

7. Define mole fraction.

8. State Henry's law.

9. What are reference electrodes? Give an example.

10. Mention the biological significance of viscosity.

11. Define p^H of a solution.

12. What are amphoteric substances? Give an example.

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Answer any **NINE** of the following questions. Each question carries **6** marks :

(9 × 6 = 54)

13. (a) What are quantum numbers? Give their significance.

    (b) Derive half life period for a radioactive element. **(4 + 2)**

14. (a) What are errors in quantitative analysis? How do you minimize the errors?

    (b) What is Vant Hoff's factor? **(4 + 2)**

15. (a) Give the difference between ionic and covalent compound.

    (b) Define standard electrode potential. **(4 + 2)**

16. (a) What is Sp^2 hybridization? Explain the molecular orbital diagram for the formation of oxygen molecule.

    (b) List out the factors affecting solubility. **(4 + 2)**

17. (a) Explain BORN-HABER cycle for the formation of sodium chloride crystal.

    (b) Differentiate between bonding and antibonding molecular orbitals. **(4 + 2)**

18. (a) Discuss the working principle of Geiger-Muller counter.

    (b) What are co-ordinate bond? Give an example. **(4 + 2)**

19. (a) Define the following terms : **(4 + 2)**

    (i) Molarity

    (ii) Mole fraction

    (iii) Normality

    (iv) Molality.

    (b) What is lattice energy? **(4 + 2)**

20. (a) Explain the construction of standard hydrogen electrode. Mention the limitations of SHE.

    (b) Define group displacement law. **(4 + 2)**

21. (a) Derive Henderson-Hasselbalch equation for an acidic buffer.

(b) List out the applications of C^{14} and I^{131}. **(4 + 2)**

22. (a) What are buffer solutions? Mention the types with a suitable example.

(b) What is osmotic pressure? **(4 + 2)**

23. (a) What are electrochemical series? Mention their applications.

(b) What is p^{ka}? Give its expression. **(4 + 2)**

24. (a) Determine experimentally the viscosity of a given liquid using Ostwald's viscometer.

(b) What is ebullioscopic constant? **(4 + 2)**

25. (a) Explain the working principle and limitations of glass electrode.

(b) Write the Nernst equation. **(4 + 2)**

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