61127

First Semester B.Sc. Degree Examination, December 2018

(CBCS – Semester Scheme)

(Freshers and Repeaters – 2014-15 and onwards)

BIOCHEMISTRY

Paper I

Time : 3 Hours] *[Max. Marks : 70*

Instructions to Candidates :

1) *This Paper is for the students of the 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. Mention the advantages of graphical representation of data.
2. What is meant by accuracy in quantitative analysis?
3. What are electromagnetic radiation? Give examples.
4. State Pauli Exclusion Principle.
5. What is lattice energy?
6. Define van der Waal's forces.
7. Write a note on applications of P^{32}.
8. How is N/P ratio related to stability of the nucleus?

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9. What are isotonic solutions?

10. What are electrochemical cells?

11. Classify the following as Lewis acids and Lewis bases : $AlCl_3$, BF_3, NH_3, SO_3.

12. What are surfactants? Give an example.

PART – B

Answer any **NINE** of the following questions. Each question carries **6** marks : **(9 × 6 = 54)**

13. (a) Describe all the four quantum numbers.

(b) Write the electronic configuration of the elements with atomic number 24 and 29. **(4 + 2)**

14. (a) Explain the geometry of Methane molecule on the basis of hybridization.

(b) What are Chelates? Give an example. **(4 + 2)**

15. (a) Explain the molecular orbital diagram for the formation of oxygen molecule.

(b) What is intramolecular hydrogen bonding? Give example. **(4 + 2)**

16. (a) Write a note on tracer techniques and mention any two applications of Co^{60} and C^{14}.

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

17. (a) Derive decay constant from decay law.

(b) Define half life period of radioactive elements. **(4 + 2)**

18. (a) How is osmotic pressure experimentally determined by Berkely-Hartley's method?

(b) Find the energy of a photon whose wavelength is 380 nm ($h = 6.6 \times 10^{-34}$ Js). **(4 + 2)**

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19. (a) Explain the construction and working principle of SHE.

(b) What is meant by standard electrode potential? **(4 + 2)**

20. (a) How pH is determined using glass electrode?

(b) What are reversible electrodes? Mention the types. **(4 + 2)**

21. (a) Explain about the ionic product of water.

(b) Derive de-Broglie's equation. **(3 + 3)**

22. (a) Describe Lewis acid-base concept and mention the demerits of Lowry-Bronsted theory.

(b) What is meant by buffer capacity? **(4 + 2)**

23. (a) Explain the significance of viscosity in biological systems.

(b) Define viscosity and give its SI unit. **(4 + 2)**

24. (a) Write a note on Radioactivity safety measures.

(b) Define packing fraction. **(4 + 2)**

25. (a) Explain the geometry of Ammonia molecule on the basis of VSEPR theory.

(b) Define bond length. **(4 + 2)**

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