Q.P. Code : 11127

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

(CBCS – Freshers & Repeaters – 2018-19 onwards)

Paper I – BIOCHEMISTRY

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

Instructions to Candidates :

1) *The question paper as two Parts, Part – A and Part – B*
2) *Answer any eight questions from Part – A and any nine questions from Part – B.*

PART – A

(8 × 2 = 16)

1. What is the SI unit for the following physical quantities?
   (a) Density
   (b) Energy.
2. What are the shapes of atomic orbital if $l = 0$ and $l = 1$?
3. What is pi-bond? How it is formed?
4. What is Group displacement law?
5. Give an example each for
   (a) 1 : 1 Electrolyte
   (b) 2 : 1 Electrolyte.
6. Define surface tension. Mention it's SI unit.
7. What are the limitations of Lowry-Bronsted theory?
8. State Henry's law of gas solubility.
9. What is Van't Hoff's factor?
10. Mention any two factors influencing electrode potential.

11. Calculate the half life period of radioactive element with a decay constant of $1.8 \times 10^{-2}\,min^{-1}$.

12. Covalent compounds have "Lower melting and boiling point than ionic compounds". Give reasons.

PART – B

(9 × 6 = 54)

13. (a) What are Quantum numbers? Explain their significance.

    (b) Write the electronic configuration of an element with atomic number 29. **(4 + 2)**

14. (a) Write any four differences between bonding molecular orbital and anti-bonding molecular orbital.

    (b) What are the bond angles in the following :

    (i) Water

    (ii) Ammonia. **(4 + 2)**

15. (a) Explain the principle and working of G.M. Counter.

    (b) Mention any two properties of Gamma Rays. **(4 + 2)**

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

    (b) Define Ebullioscopic constant. **(4 + 2)**

17. (a) Explain the construction of Quinhydrone electrode with a neat labeled diagram.

    (b) Mention the applications of Ion selective electrodes. **(4 + 2)**

18. (a) What is solubility product? Explain it's application in precipitation of third group basic radicals.

    (b) Define pH. Mention the pH of human blood. **(4 + 2)**

19. (a) How do you determine surface tension of an organic liquid by using stalagmometer?

    (b) Explain the relationship between vapour pressure and freezing point. **(4 + 2)**

20. (a) Calculate the equivalent masses of potassium dichromate and ferrous ammonium sulfate in acidic medium by oxidation number method.

    (b) How valency is different from oxidation number? **(4 + 2)**

21. (a) Set up Born-Haber's cycle for formation of 1 mole of Nacl.

    (b) Calculate the bond order for Oxygen molecule. **(4 + 2)**

22. (a) Explain

    (i) N/P ratio of radio elements

    (ii) Mass defect.

    (b) What is average life of a radioactive element? **(4 + 2)**

23. (a) Sketch solubility curves for KNO_3 and $Na_2SO_4.10H_2O$. Explain the differences.

    (b) What is Semipermeable membrane? Give an example of artificial semipermeable membrane. **(4 + 2)**

24. (a) What are reversible electrodes? Explain the types.

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

25. (a) Explain the different methods of representing data graphically.

    (b) Define the terms

    (i) Precision

    (ii) Accuracy. **(4 + 2)**
