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I Semester, B.Sc. Examination, December - 2019
(CBCS) (F+R) (2014-15 and onwards)
BIOCHEMISTRY - I

Time : 3 Hours Max. Marks : 70

Instructions : *(i) The question paper has two parts,* ***Part - A*** *and* ***Part - B.***
(ii) Answer ***any eight*** *questions from* ***Part - A*** *and* ***any nine*** *question from* ***Part - B.***

PART - A

Answer **any eight** of the following questions. Each question carries **two** marks. **8x2=16**

1. What are derived units ? Give an example.
2. Define : (a) Wave number (b) Frequency
3. What is resonance ? Write the resonance forms of benzene.
4. Write the relationship between vapour pressure and boiling point.
5. State group displacement law.
6. What is (a) packing fraction (b) Binding energy ?
7. Calculate the oxidation number of Cr in $K_2Cr_2O_7$.
8. Define depression in freezing point. Mention cryoscopic constant.
9. Name any two secondary electrodes.
10. Define pH. Mention the pH of blood.
11. What is exponential notation ? Mention its importance.
12. Define (a) Lattice energy (b) Covalent bond.

PART - B

Answer **any nine** of the following questions. Each question carries **six** marks. **9x6=54**

13. (a) Explain the different types of graphs for data representation and mention its importance. **4+2**
    (b) What is accuracy and precission ?

14. (a) State **4+2**
    (i) Aufbau's principle.
    (ii) Hund's rule of maximum multiplicity.
    (b) Calculate the equivalent mass of $KMnO_4$ in the given equation.
    $2KMnO_4 + 3H_2SO_4 \rightarrow K_2SO_4 + 2MnSO_4 + 3H_2O + 5[O]$

P.T.O.

15. (a) Explain the postulates of molecular orbital theory. 4+2
(b) State Fajan's rule.

16. (a) Explain how radioactivity is detected using GM counter ? 4+2
(b) What is half life period of a radioactive element ?

17. (a) What is osmotic pressure ? Explain how it is determined by Berkley-Hartley's method ? 4+2
(b) Define : (a) Molarity (b) Mole fraction

18. (a) What are reversible electrodes ? Mention the types and give an example for each. 4+2
(b) Write Nernst equation and elaborate the terms involved in it.

19. (a) Derive Henderson-Hasselbalch equation. 4+2
(b) State Lowry-Bronsted theory of acids and bases.

20. (a) What is surface tension ? Explain how it is determined using stalagmometer ? 4+2
(b) Define Viscosity. Mention its unit.

21. (a) Explain quantum numbers. 4+2
(b) Write a note on errors in quantitative analysis.

22. (a) Explain the Born-Haber cycle for NaCl. 4+2
(b) Mention any two characteristics of ionic compounds.

23. (a) Mention the properties of α, β and γ radiations. 4+2
(b) What are hypo and hypertonic solutions ?

24. (a) Explain Donnan membrane equilibrium. Mention its importance. 4+2
(b) What are weak electrolytes ? Give two examples.

25. (a) What are selective electrodes ? Mention their types and applications. 4+2
(b) Write a note on common ion effect.

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