

E 6538



00006538



Reg. No.....

Name.....

B.Sc. DEGREE (C.B.C.S.S.) EXAMINATION, SEPTEMBER 2024

First Semester

Complementary Course—Chemistry

BASIC THEORETICAL AND ANALYTICAL CHEMISTRY

(Common for Physical Sciences, Life Sciences, Geology and Family and Community Sciences)

[2013—2016 Admissions]

Time : Three Hours

Maximum Marks : 60

Part A

Answer all questions.

Each question carries 1 mark.

1. Orbital is the _____.
2. Greater the value of K_a _____ is the strength of Acid'.
3. Entropy of fusion is defined as _____.
4. A state function is defined as _____.
5. Standard solution is the one whose _____.
6. R_f value is defined as _____.
7. _____ is used as a Drying agent.
8. The phenomenon of Diffraction of light can be explained on the basis of the _____ nature of light.

(8 × 1 = 8)

Part B

Answer any six questions.

Each question carries 2 marks.

9. State and explain Heisenberg's uncertainty principle ?
10. Explain the terms Buffer solution and Buffer action ?

Turn over





E 6538

11. A system absorbs 6 kJ of heat and performs 3000J of work. Calculate the internal energy change produced.
12. What are Redox Titrations ? Give an example ? Mention one redox Indicator.
13. Differentiate between Molality and Molarity ?
14. Explain the principle of Paper Chromatography ?
15. What is Gibbs free energy ? Explain the Significance of Gibbs Free energy.
16. What do you mean by Primary Standard ? Explain. Give *one* example.
17. Define Entropy of Vaporisation and entropy of Sublimation ?

(6 × 2 = 12)

Part C

*Answer any **four** questions.*

Each question carries 4 marks.

18. Explain the term Entropy ? Discuss the Entropy Criteria for the spontaneity of a process ?
19. Explain the term Solubility product ? Also explain how solubility product principle is applied in inter group separation of Cations in Cation analysis ?
20. Give a short description of Ion exchange Chromatography ?
21. Write briefly on Gravimetric method of Analysis ?
22. Give a short account of Purification techniques ?
23. What are Quantum numbers ? Describe the four Quantum numbers in short ?

(4 × 4 = 16)

Part D

*Answer any **two** questions.*

Each question carries 12 marks.

24. (a) Write briefly on Principle and method of TLC and Column chromatography ?
(b) Also discuss their applications.
25. Explain the different types of Errors and methods for minimisation of Errors.





E 6538

26. (a) State and Explain :

- (1) Photoelectric Effect.
- (2) Hunds rule of Multiplicity ?

(b) Discuss the applications of Common ion effect ?

(c) Write a note on Filtration Techniques ?

27. (a) State and Explain Third law of Thermodynamics ?

(b) What happens to the Entropy of the universe in a reversible and irreversible Process ?

(c) Give the relation Connecting Gibbs energy G and Entropy S. Arrive at a relationship connecting ΔG and ΔS

(d) Discuss the effect of Temperature on Spontaneity of Reaction ?

(2 × 12 = 24)

