

**FIRST SEMESTER B.Sc. DEGREE EXAMINATION
NOVEMBER 2014**

(CUCBCSS-UG)

Complementary Course – Chemistry

CHE 1C 01— GENERAL CHEMISTRY

Time : Three Hours

Maximum : 64 Marks

Part A (One Word/Sentence)*Answer all questions.**Each question carries 1 mark.*

1. In the modern periodic table, elements are arranged in the increasing order of _____
2. The conjugate base of NH_4^+ is _____
3. Diphenyl amine is a _____ indicator.
4. A solution of known concentration is called _____
5. _____ theory is used to explain the shapes of molecules and ions.
6. The number of electrons in an orbital is restricted to two. This is in accordance with _____
7. Emission of _____ from a radioactive element does not change its charge or mass.
8. The $(4n + 1)$ radioactive decay series is otherwise called _____
9. The metal present in chlorophyll is _____
10. Protein with a prosthetic group is known as _____

(10 x 1 = 10 marks)

Part B (Short Answer)*Answer any seven questions.**Each question carries 2 marks.*

11. Calculate the mass of Mohr's salt ($E = 392$) for 100 ml 0.1 N solution.
12. Find the oxidation number of **P** in $\text{P}_2\text{O}_7^{4-}$ and H_3PO_4 .
13. What are **redox titrations**? Give *one* example.
14. Differentiate between accuracy and precision.
15. Write down the **Schrodinger** wave equation and explain the terms.
16. Calculate the number of molecules in 5.6 L of CO_2 gas at **STP**.

Turn over

17. Write any *two* units of radioactivity.
18. Write briefly on artificial radioactivity.
19. Give the names of any *two* nuclear power stations in India.
20. What is hydrogen bonding? Explain using H_2O molecule.

(7 x 2 = 14 marks)

Part C (Paragraph)

Answer any **four** questions.

Each question carries 5 marks.

21. Define ionization enthalpy. How does it vary along a period and down a group? Explain.
22. Explain the principle and advantages of double burette method of titration.
23. Outline the postulates of Bohr theory and mention any *two* limitations of the theory.
24. Discuss the Pauling scale of electro negativity.
25. Write note on the applications of radioactive isotopes.
26. Explain the structure and mechanism of action of Na-K pump.

(4 x 5 = 20 marks)

Part D (Essay)

Answer any **two** questions.

Each question carries 10 marks.

27. (a) Explain the application of common ion effect and solubility product in qualitative analysis.
(b) Write briefly on Mass defect and Binding energy.

(6 + 4 = 10 marks)

28. What are the features of hybridization? Describe sp^3d , sp^3d^2 and sp^3d hybridizations using suitable examples.

29. (a) Draw the molecular orbital diagram of CO molecule and calculate the bond order.
(b) Write briefly on the different theories of acids and bases.

(5 + 5 = 10 marks)

30. Discuss the mechanism of O_2 transport by hemoglobin.

[2 x 10 = 20 marks]