

# **KAMARAJ COLLEGE (Autonomous)**

Accredited with A+ Grade by NAAC

(Affiliated to Manonmaniam Sundaranar University, Tirunelveli)

THOOTHUKUDI – 628 003

**(6 Pages)**

**Reg. No: .....**

**Question Code No : 25000306**

**Sub Code : 24UMCH11**

**UG Degree - End Semester Examinations, November 2025**

**First Semester**

**B.Sc. CHEMISTRY**

**General Chemistry**

**(For those who joined in July 2024 onwards)**

**Time : 3 Hours**

**Maximum : 75 Marks**

**PART – A (10 × 1 = 10 Marks)**

**Answer ALL Questions**

**Choose the correct answer:**

1. Who proposed quantum theory of radiation?

(a) Niel's Bohr

(b) Max Planck

(c) J.J. Thomson

(d) John Dalton

2. An atom consists of a minute positively charged rigid body at its centre. It is called \_\_\_\_\_

(a) Nucleus

(b) Neutrons





Mullikan and Alfred Rochow scales?

13. (a) State and explain Fajan's rule.

**(OR)**

(b) How is lattice energy determined by using Born Haber cycle?

14. (a) What is meant by Vanderwaals forces? Explain its types.

**(OR)**

(b) Draw the molecular orbital diagram for CO molecule and explain its bond order and magnetic behaviour.

15. (a) Explain how the inductive effect influences the basic strength of amines?

**(OR)**

(b) Define hyper conjugation effect and explain its influence as the reactivity of organic compounds.

**PART - C (5 X 8 = 40 Marks)**

**Answer ALL Questions choosing either (a) or (b).**

**Answer should not exceed 500 words.**

16. (a) Derive de Broglie wave equation. How it is verified experimentally?

**(OR)**

(b) Write notes on

(i) Hund's rule

(ii) Pauli's exclusion principle

(iii) Aufbau principle.

17. (a) Explain the classification of elements on the basis of their electronic configuration.

**(OR)**

(b) Discuss the postulates of quantum mechanics.

18. (a) Describe VSEPR theory. How does it explain the shape of molecules?

**(OR)**

(b) Sketch the shapes of atomic orbitals and explain.

19. (a) What is meant by hydrogen bonding? Explain the different types of hydrogen bonding and its effects.

**(OR)**

(b) Describe the band theory of metallic bonding.

20. (a) Compare addition and substitution reaction with examples.

**(OR)**

(b) What are free radicals? Explain in detail the types of free radicals and the factors that govern the stability of free radicals.