

**D 73107**

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Name.....

Reg. No.....

**FIRST SEMESTER B.A./B.Sc. DEGREE EXAMINATION, NOVEMBER 2019**

(CUCBCSS—UG)

Chemistry

**CHE 1B 01—THEORETICAL AND INORGANIC CHEMISTRY—I**

Time : Three Hours

Maximum : 80 Marks

**Section A (One Word Question)**

*Answer all questions.*

*Each question carries 1 mark.*

1. Hydrogen bomb works in the principle of \_\_\_\_\_.
2. Write the expression for Heisenberg's uncertainty principle.
3. A verbal or mathematical description of a phenomenon that allows for general predictions is called \_\_\_\_\_.
4. Define a mole.
5. Name an external indicator for dichrometric titrations.
6. How many significant figures are there in 0.02 ?
7. Atoms with same atomic number, but different mass number are called \_\_\_\_\_.
8. Who is known as the father of modern chemistry ?
9. In the atomic spectrum of hydrogen, the series comes in ultraviolet region is \_\_\_\_\_.
10. An alpha-particle is equivalent to \_\_\_\_\_ atomic nucleus.

(10 × 1 = 10 marks)

**Section B (Short Answer Questions)**

*Answer any ten questions.*

*Each question carries 2 marks.*

11. Differentiate between oxidation number and valency.
12. Define standard solution.
13. What is meant by hypothesis ?
14. Differentiate between normality and molality.
15. What is the first aid for burn due to bromine ?
16. What is alchemy ?

**Turn over**

17. 20 ml sodium hydroxide is dissolved in 250 ml of water. Calculate the molarity of the solution.
18. What is Ritz combination principle ?
19. State group displacement law.
20. What are the limitations of Rutherford atom model ?
21. Define mass defect and binding energy.
22. Differentiate between iodimetry and iodometry.

(10 × 2 = 20 marks)

### Section C (Paragraph Questions)

*Answer any five questions.  
Each question carries 6 marks.*

23. What is meant by primary standard ?
24. Write a brief note on the origin of modern chemistry.
25. What are the advantages of double burette method of titration ?
26. Explain Aston's mass spectrograph.
27. Account Sommerfeld modification of Bohr theory.
28. Illustrate the theory of permanganometric titrations.
29. Write a note on the nuclear reactors in India.
30. Explain Plank's Quantum hypothesis.

(5 × 6 = 30 marks)

### Section D (Essay Questions)

*Answer any two questions.  
Each question carries 10 marks.*

31. Write a brief note on the different components of a research project.
32. Explain Bohr atomic theory. Derive equations to calculate Bohr radius, velocity and energy of an electron.
33. Illustrate with suitable examples, explain any five applications of radioactivity.
34. Briefly explain the theory of indicators used in acid-base, redox, adsorption and complexometric titrations.

(2 × 10 = 20 marks)