32672 (Pages : 2) Name.....

Reg. No.....

FIRST SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, NOVEMBER 2022

(CBCSS)

Chemistry

CHE 1C 02—ELEMENTARY INORGANIC CHEMISTRY

(2019 Admission onwards)

me : Three Hours Maximum : 30 Weightage

Section A

Answer any **eight** *questions.*
Each question has 1 *weightage.*

1. Carbon monoxide behaves as a Lewis base towards diborane ; but not towards BF_3. Why ?
2. The acid-base strength is not an inherent property of a substance and it largely depends on the reference solvent ; justify this statement.
3. What is 'inorganic graphite' ? Why is it called so ?
4. Classify the following compounds into *closo, nido* and *arachino* structures :
   a) B_5H_9.
   b) B_4H_{10}.
   c) B_5H_{11}.
   d) $C_2B_{10}H_{12}$.
5. Discuss the consequences of isomorphous substitution on silicates.
6. Comment on the metallic property of polythiazyl.
7. What are super heavy elements ? Give examples.
8. Account for the abrupt changes in the Ellingham diagrams.
9. What do you mean by radiation dosimetry ?
10. How do graphenes differ from fullerens ?

(8 × 1 = 8 weightage)

Turn over

Section B

Answer any **six** *questions.*
Each question carries 2 weightage.

11. What do you mean by differentiating and levelling solvents ? Explain with suitable exa
12. Comment on the acidity of the different types of hydrogen atoms present in carborane
13. Describe the synthesis and structure of S_4N_4. Comment on the thermochromism exhibi compound.
14. What are Latimer and Frost diagrams ? Mention their uses.
15. Discuss the liquid drop model of nucleus.
16. Describe the bottom-up and top-down approaches for the synthesis of nanomateria examples.
17. Describe the principle involved and working of GM counter.
18. Discuss the applications of XRD in the study of nanomaterials.

(6 × 2 = 12 we

Section C

Answer any **two** *questions.*
Each question carries 5 *weightage.*

19. What are the important characteristics of liquid ammonia as a solvent? Briefly dis precipitation reactions taking place in liquid ammonia.
20. Describe the methods of preparation of borazine and substituted borazines. Describe the s and important reactions of borazine.
21. Give an account of the isopoly and heteropoly anions of W and Mo.
22. Discuss the synthesis, structure and reactivity of $(PNCl_2)_3$. What are the important phosphazines ?

(2 × 5 = 10 we