Reg. No..... Name.....

M.SC DEGREE END SEMESTER EXAMINATION OCTOBER 2016

SEMESTER – 3: CHEMSITRY

COURSE: P3CHET09 – STRUCTURAL INORGANIC CHEMISTRY

Common for Regular (2015 Admission) & Supplementary / Improvement (2014 Admission)

Time: Three Hours Max. Marks: 75

Section A

*(Answer **any Ten** questions. Each question carries **2** marks)*

1. How the structures of ZnS and ZnO are different?
2. Distinguish between spinel and inverse spinel structures.
3. Discuss the meaning of first order phase transitions.
4. Can fullerenes function as a conductor? How can it be made to function as a superconductor?
5. What is Hall effect?
6. What is Meissner effect? What is its application?
7. Find the styx number for the compound B_4H_{10} and draw its structure.
8. Explain the structure of 6-molybdotellurate anion.
9. Which are the elements form heterocatenation compounds in main group chemistry. Describe the synthesis of one of them.
10. Describe the synthesis and structure of P_4S_{10}.
11. What are metallacarboranes?
12. Describe the structure of Zintl cation formed by bismuth and anion by Tin.
13. Write on principal raw materials used in ceramic industry.

(2 × 10 = 20)

Section B

*(Answer **any Five** questions. Each question carries **5** marks)*

14. Describe the point defects and line defects found in solids.
15. What are Martensitic transformations?
16. What do you mean by high temperature superconductors?
17. What are intrinsic and extrinsic semiconductors? Explain with examples.
18. Explain closo, nido, arachno and hypho structures found in boron chemistry?
19. What are homocyclic inorganic ring systems? Explain the structure and bonding in sulphur and selenium compounds?
20. Explain the structure and bonding in $[ReX_8]^{2-}$
21. Mention any four principal methods for the classification of refractory products with examples.

(5 × 5 = 25)

Section C

*(Answer **any Two** questions. Each question carries **15** marks)*

22. Explain perosvskite and illmenite structures.
23. (a) Describe the classification and structure of silicates.
    (b) Describe the preparation of borazine. Explain its structure and bonding.

24. How is 1, 2-dicarba-closo-dodecaborane (12) prepared? Write a note on its isomerism.
25. What are safety glass and fibre glass? How are they made? What are their important uses?

(15 × 2 = 30)

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