Reg. No. :…… **Name :** ……..…… **P 305**

MSc DEGREE EXAMINATION OCTOBER 2015

SEMESTER: **3 SUBJECT: CHEMISTRY**

COURSE: **P3CHET09 - STRUCTURAL INORGANIC CHEMISTRY**

Time: Three Hours Max. Marks: 75

SECTION A

(Answer any **10** questions. Each question carries **2** marks)

1. Describe the structure of zinc blende?
2. Explain type I solid state reaction with example.
3. What do you mean by sintering?
4. Describe the structure of spinel.
5. Describe the structure and magnetic properties of magnetoplumbites?
6. What is photoconductivity? What are the uses of photoconducting materials?
7. Explain the structure of pyroxenes.
8. Using a tungsten isopolyion as an example, explain the formation of a heteropoly ion.
9. Describe homocyclic ring systems formed by sulfur.
10. How many isomers are possible for $P_3N_3Cl_2Br_4$? Explain.
11. Calculate the number of framework electrons of $B_7H_7^{2-}$, B_4H_8 and B_5H_{11} and assign the type to which they belong to.
12. Describe the structure of trinuclear cluster formed by rhenium.
13. Explain the role and function of refractory products. (2 × 10 = 20)

SECTION B

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

14. What is the difference between fluorite and antifluorite structures found in solids? Explain
15. What are order disorder transitions?
16. Explain free electron theory of solids.
17. Explain BCS theory of superconductivity
18. What is polythiazyl? Explain its structure. Why it is considered as one dimensional conductor.

19. Describe the synthesis of trimeric phosphazene. Explain its structure and bonding.
20. Explain mno rule?
21. Compare the terms creep and fatique. (5 × 5 = 25)

SECTION C

(Answer any **2** *questions. Each question carries* **15** *marks)*

22. Explain three methods of growing single crystals
23. (a) What are P-S cage compounds? Discuss their characteristics
    (b) How are silicones prepared? Discuss their structure and applications.
24. Discuss the structures of various dicarboxylate of Re, Cu and Cr.
25. Explain the steps involved in the processing of ceramics. Using a specific example, illustrate the growth and structure of sol-gel polymers. (15 × 2 = 30)

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