THE AMERICAN COLLEGE, MADURAI

(An Autonomous Institution Affiliated to Madurai Kamaraj University)

Re-accredited (2nd Cycle) by NAAC with Grade "A", CGPA – 3.46 on a 4-point scale

Backlog Arrear Examination, March 2021

PGC 5524 **INORGANIC CHEMISTRY-IV** **Max : 75 mks**

Time : 3 Hrs

Answer any FIVE questions **(5 x15 = 75)**

1. a) Give an account on clathrates.

   b) Explain the inclusion behaviour of crown ethers and its applications.(7+8)

2. a) Derive the topologically acceptable styx code for B_4H_{10}. And bring out the salient features of its ^{11}B nmr studies?

   b) Compare and contrast the properties of borazine with benzene?

   c) Apply Wades rule to predict the structures of i) CBH_6^- ii) $(C_2B_{10}H_{12})$ (4+7+4)

3. a) Discuss the synthetic utility of following silicates in relation to their structures

   i. i) talc ii) ultramarines

   b) Give an account of silicones in technology? (8+7)

4. a) Draw all possible structures of S_4N_2? Enumerate the experimental evidences in favour of the correct structure?

   b) Explain the synthesis of S_4N_4? Describe the bonding involved in it? (7+8)

5. a) Discuss in detail the theories of bonding in chlorocyclotriphosphazenes.(10)

   b) Explain the mechanism of Friedal craft's arylation reaction of $N_3P_3Cl_6$. Give evidences for the products formed? (10+5)

6. a) Discuss the preparation, properties and structure of polythiazyls?

   b) Write a note on iospolyacids. Why?(10+5)

7. a) How is polychlorophosphazene prepared? Enumerate its usefulness in various fields.

   b) Give a brief account of catenated compounds formed by group V elements. (7+8)

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