

3017

- (b) Discuss the "gold standard" role of lithium in treating bipolar disorder. 5
- (c) Discuss the role of zeolites as catalysts in the petrochemical industry. 5
6. (a) Discuss in detail the mechanism of action of Cisplatin focusing on its aquation, interaction with DNA, and induction of apoptosis. 5
- (b) Discuss the historical role and modern applications of Gold-containing drugs in Medicine. 5
- (c) Explain the mechanism of Fischer-Tropsch synthesis, including chain initiation, propagation, and termination steps to form alkanes and alkenes. 5

[This question paper contains 4 printed pages]

Your Roll No. :

Sl. No. of Q. Paper : **3017** **I**

Unique Paper Code : 2173522010

Name of the Paper : Applied Inorganic Chemistry

Name of the Course : **B.Sc. (Prog.)**

Semester : IV/VI

Time : 2 Hours **Maximum Marks : 60**

Instructions for Candidates :

- (a) Write your Roll No. on the top immediately on receipt of this question paper.
- (b) Attempt any **four** questions in **all**. Question **NO.1** is compulsory.
- (c) **All** questions carry equal marks.
1. (a) How is di-ammonium phosphate (DAP) fertilizer prepared industrially? Discuss the impact of DAP on the environment.
- (b) Classify the following fertilizers as direct and indirect.
- (i) Gypsum

- (ii) Urea
- (iii) Calcium superphosphate
- (iv) Calcium Carbonate
- (v) Ammonium nitrate
- (c) Describe in detail the catalytic cycle for the hydrogenation of an alkene using Wilkinson's catalyst. 5
- 2. (a) Explain the manufacture, properties and applications of the ammonium nitrate as fertilizers. 5
- (b) What are the sources and significance of nitrogen, phosphorus, and potassium in the growth of plant growth? 5
- (c) Explain the following terms with examples (any **two**): 5
 - (i) Insertion reaction
 - (ii) Reductive-elimination reaction
 - (iii) Oxidative-addition reaction
- 3. (a) Briefly describe the environmental impact of using fertilizers in farming. 5

- (b) What do you mean by fertilizer? Why do we need to add them to the soil? 5
- (c) Write the two metal diagnostic agents and discuss their applications in medicine. 5
- 4. (a) Explain the following terms with examples (**any two**): 2.5×2=5
 - (i) What precautions should be taken while storing ammonium nitrate?
 - (ii) Single superphosphate
 - (iii) KCl do not require chemical synthesis.
- (b) Define catalyst and write the characteristics of good catalyst. 5
- (c) Explain the following: 2.5×2=5
 - (i) Catalytic promoters
 - (ii) Importance of biocatalysis
- 5. (a) Compare and contrast the clinical uses of BAL and DMSA chelating agents in arsenic and mercury poisoning. 5