

M-6321

M.Sc. (IInd Semester) Examination, 2020 CHEMISTRY

(Inorganic Chemistry - II)

Time Allowed : Three Hours

Maximum Marks : 70

Note : Attempt all the five questions. One question from each unit is compulsory. Marks are indicated against the questions.

Unit - I

Q. 1. What are Orgel and Tanabe-Sugano diagrams ? Draw Orgel and Tanabe-Sugano diagrams for octahedral complexes having d^2 and d^4 states. **14**

Or

Discuss the following :

- (i) Determination of ground state term symbol for d^2 configuration. **7**
- (ii) Calculation of D_Q , B and P parameters. **7**

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Unit - II

Q. 2. Discuss the preparation, properties and structure of higher boranes and carboranes. **14**

Or

Discuss the following :

- (i) Metal carbonyl and Halide Clusters **8**
- (ii) Metalloboranes **6**

Unit - III

Q. 3. (i) Discuss the causes and consequences of lanthanide contraction. **7**

(ii) Discuss oxidation state and magnetic properties of lanthanides and actinides. **7**

Or

- (i) What is Nanotechnology ? Give preparatory methods and its applications in various field. **10**

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- (ii) Give the nuclear and non nuclear applications of f-block elements. **4**

Unit - IV

- Q. 4.** (i) Discuss the biological role of sodium, potassium, calcium, zinc and copper. **10**
- (ii) What are anticancer drugs ? **4**

Or

- (i) Discuss fixation of Nitrogen and Nitrogen Cycle. **8**
- (ii) Discuss various oxygen carriers. **6**

Unit - V

- Q. 5.** (i) Discuss the factors which affects the stability of metal complexes. **8**
- (ii) Discuss about nomenclature of chiral complexes. **6**

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Or

- (i) Discuss stereoisomerism in inorganic complexes with suitable examples. **10**
- (ii) What is HSAB approach ? **4**
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