

PD – 262
M.Sc. (Second Semester)
CHEMISTRY
Examination June 2021
Paper- I
Inorganic Chemistry

Time : Three Hours]

[Maximum Marks : 80
[Minimum Pass Marks : 29

नोट : दोनों खण्डों से निर्देशानुसार उत्तर दीजिए। प्रश्नों के अंक उनके दाहिनी ओर अंकित हैं।

Note : Answer from both the Sections as directed. The figures in the right-hand margin indicate marks.

Section-A

1. Answer the following questions:- [1x10=10]
- Metals with high charge to radius ratio forms ----- complexes. (More stable/less stable)
 - Replacement of monodentate ligands by cycle polydentate ligands leads to.-
1- Greater stability 2- Greater lability 3- Greater inertness 4- Non of these
 - Which has a great Tran's diseting influence among the following pair. Explain why? H₂O Or NH₃
 - What do you mean by the term inest and labile?
 - Give the example of redox reaction.
 - Give examples of oxidation reduction reactions for metal complores in which-
1- No net chemical change by the transfer for metal complores in which
2- There is a net chemical change.
 - Define metal elusters with suitable exampla.
 - What are metal π – complexes? Give example.
 - How many electrons are there in the valence shell of the metal carbonyls? Explain with are example.
 - What is Keggin Ion?
2. Answer the following question:- [2x5=10]
- Drive relation between stepwise and overall for mation constants for complex compouns.
 - Explain EAN rule for structure of carbonyl compounds with one example.
 - What are redox reactions? Explain with examples.
 - Discuss SN¹ mechanism for octahedral complexes
 - What are isopoly vanadates? Discuss in berief.

Section-B

Answer the following questions:-

[12x5=60]

Unit-I

3. a- Explain the term stepwise formation and overall for mation constant.
b- How will you determine the stability constant of a complex.

Or

What do you mean by stability of a ciomplex ion? Discuss the factors which affect the stability of complexes.

Unit-II

4. What are hydrolysis reactions? Discuss acid hydrolysis of six co-ordinated C_o (III) amine complexes.

Or

Give evidence to suggest that the substitution in square planar complexes proceeds through SN² mechanism. Why are Ni (II) and pd (II) square planar complexes more labile than square planar complexes of pt(II)

Unit-III

4. Name the mechanisms involved in one electron transfer reactionis. Discuss the inner sphere mechanism of such reactionis.

Or

Write notes on (any two)

- Carbosanes
- Higher boranes
- Metalloboranes

Unit-IV

6. Describe the uses of vibrational spectra of metal carbonyls for bonding and structural elucidation.

Or

Write notes on (any two)

- 1- Metal nitrosyls
- 2- Dinitrogen complexes
- 3- Dioxygen complexes

Unit-V

7. Write an essay on isopoly acids.

Or

Write are Heteropoly salts and acids? Discuss their structures.