Unit-III / FkeâeF-III

6. Describe the structure and binding in case of organotitanium compounds. 11
keâeyeevekeâ ŠeFŠeveÙece Ùeeeiekeâ keâe mejÛevee SJe meÙeepee keâe mecePeeFS~

7. (a) What are metal carbonyls and give various methods of preparation. 6
(De) Oeele keâejyeeeveue keÙee n? Fmekeâ yeveeve keâe eJeeYeVe eJeeOeÙee keâe yeleeFS~
(b) Structure and bonding in organotin compounds. 5
(ye) keâeyeevekeâ eŠve Ùeeeiekeâe keâe mejÛevee Deej yevOelee~

Unit-IV / FkeâeF-IV

8. Write notes on the following: 11
(a) Symbiosis
(b) Pearson's HSAB principle
evecveeueeKele hej eŠhheeCeÙee eueeKeS :
(De) emecyeÙeeememe
(ye) eheÙejmeve keâe HSAB emeæevle

9. What are essential trace elements? What important role iron and zinc plays in biological processes. 11
DeeJeMÙekeâ me#ce leJe keÙee n? peeJekeâ Øee>eâÙee ce DeeÙejve leLee epekeâ keâe keÙee cenJe n?

A (Printed Pages 4)

Roll No. _____

S-625

B.Sc. (Part-III) Examination, 2015

CHEMISTRY

First Paper

(Inorganic Chemistry)

Time Allowed : Three Hours] ***[Maximum Marks : 75***

Note : Answer five questions in all. Question No. 1 is compulsory. Attempt one question from each Unit.
keâue heeÛe ØeMvee keâ Gòej oeepeS~ ØeMve me. 1 DeeveJeeÙe n ØelÙekeâ FkeâeF me Skeâ ØeMve keâeepeS~

1. Explain the following with Reasons: 3×10
evecveeueeKele keâe keâejCe meenle eJeJeÛevee keâeepeS:
(i) What do you mean by transmetalation reactions.
ŠevmeceŠueMeve DeeYee>eâÙee me keÙee mecePele n~
(ii) Give selection rules for electronic spectra.
FuekeŠeevekeâ mhekeše keâ ÛeÙeve eveÙece keâe yeleeFS~
(iii) V $(Co)_6$ is a paramagnetic carbonyl.
V $(Co)_6$ Skeâ DeveÛecyekeâeÙe keâeyeeeveue n~

(iv) Calculate CFSE for d^5 in low spin octahedral and d^7 in high spin octahedral system.
ceeCeYe #e$e mLeeeÙelJe Gpee d^5 keâe De°heâuekeâeÙe evecve leCeve Deej d^7 keâe De°heâuekeâeÙe GÛÛe leCeve ce ieCevee keâeepeS~

(v) What is Lande splitting factor?
uev[eJeYeepeve keâejkeâ keÙee n?

(vi) Differentiate between spin magnetic moment and orbital magnetic moment.
Ûe>eâCe ÛecyekeâeÙe DeeleCe Deej keâ#eeÙe ÛecyekeâeÙe DeeleCe ce eYeVelee~

(vii) What do you mean by curie point?
keÙejeeyevo me keÙee mecePele ne?

(viii) Trans effect.
Ševme ØeYeeJe~

(ix) Biological role of carbonic anhydrase
keâejyeeevekeâ Svene[pe keâe peeJekeâ Yeecekeâe~

(x) Biological role of calcium and magnesium.
keâeumeÙece Deej ceieveeMeÙece keâe peeJekeâ Yeecekeâe~

Unit-I / FkeâeF-I

2. What are the factors which affect crystal field splitting energy? Discuss the splitting of d-orbitals in octahedral field. 12
e>eâmšue #e$e eJeYeepeve Tpee keâe keâeve me keâejkeâ ØeYeeeJele keâjle n~ De°heâuekeâeÙe #e$e ce d-keâ#ekeâe keâ eJeYeepeve keâe eJeJeÛevee keâeepeS~

3. (a) How does substitution reactions occur in square planar complexes? 6

(De) Jeieekeâej meceleueeÙe mekeâuee ce ØeelemLeeheve e>eâÙeeS ekeâme Øekeâej nelee n?

(b) Explain in detail the valance bond theory and crystal field theory and their limitations. 6

(ye) meÙeepekeâlee yevOe Deej ceeCeYe #e$e emeæevle keâe eJemleej me mecePeeFS Deej Fmekeâe meeceeS yeleeFS~

Unit-II / FkeâeF-II

4. (a) Discuss magnetic succeptibility and how does it vary with temperature? 5

(De) ÛecyekeâeÙe ØeJeeÒe keâe JÙeeKÙee keâeepeS Deej Ùen leehe keâ Devemeej keâme yeouelee n~

(b) Discuss the electronic spectrum of $[Ti\ (H_2O)_6]^{3+}$ complex ion?

(ye) $[Ti\ (H_2O)_6]^{3+}$ mekeâue DeeÙeve keâ Fuekešeevekeâ mhekešce keâe eJeJeÛevee keâeepeS~

5. (a) Determine the ground state term for d^2 and d^5 configuration. 5

(De) d^2 SJe d^5 eJevÙeeme keâ eueS Ye DeJemLee heo %eele keâeepeS~

(b) Explain orgel diagrams and on orgel diagram show splitting of d^1 and d^9 confign in octahedral field. 6

(ye) Deejieue eÛe$e keâe mecePeeFS Deej De°heâuekeâeÙe #e$e ce d^1 leLee d^9 eJevÙeemee nle Deejieue eÛe$e yeveeFS~