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**SUBJECT CODE NO:- B-2143**  
**FACULTY OF SCIENCE AND TECHNOLOGY**  
**B.Sc. T.Y (Sem-VI) Examination OCT/NOV 2019**  
**Chemistry Paper –XVI**  
**(Inorganic Chemistry)**

[Time: 1:30 Hours]

[Max.Marks:50]

Please check whether you have got the right question paper.

- N.B
- i) Attempt all questions.
  - ii) Draw neat and labelled diagrams wherever necessary.

## Section A

- Q.1
- (a) Discuss the splitting of d-orbitals in octahedral metal complexes. 10
  - (b) Give any two methods of preparation, properties and uses of organo lithium compounds. 10
- OR
- (c) Discuss in detail about Nitrogen Fixation. 10
  - (d) Discuss the principle and technique of Thin Layer chromatography. 10
- Q.2
- (a) Discuss the electronic spectra of  $[Ti(H_2O)_6]^{3+}$  ion. 10
  - (b) Explain the effect of following factors on  $10Dq$  parameter. 10
    - (i) Nature of ligand.
    - (ii) Nature of central metal ion.
- OR
- (c) Write short notes : (Any Four) 20
    - 1) Limitations of valence bond theory.
    - 2) Laporte selection rule.
    - 3) classification of organometallic compounds.
    - 4) Importance of Nat ions in bio system.
    - 5) Ascending Paper chromatography.
    - 6) Importance of  $Mg^{++}$  ions in bio system.

Q.3 Multiple choice questions.

10

- 1) The energy of  $t_2g$  orbital tetrahedral complexes increases by
  - a)  $-6 Dq$  b)  $-4 Dq$  c)  $+4 Dq$  d)  $+6 Dq$ .
- 2) C F. S. E of  $d^4$  system in strongfield, octanedral complex in
  - a)  $-12 Dq$  b)  $-4 Dq$  c)  $-16 Dq$  d)  $+6 Dq$ .
- 3) The ground term symbol for  $d^3$  system in
  - a)  $2D$  b)  $4F$  c)  $5D$  d)  $3F$ .
- 4) For spin allowed transitions ,
  - a)  $\Delta l = \pm 0$  b)  $\Delta l = \pm 1$  c)  $\Delta s = 0$  d)  $\Delta s \neq 0$ .
- 5) The role of myoglobin in biosystem into
  - a) transport of  $O_2$  b) store  $O_2$  c) store  $CO_2$  d) None.
- 6) Nitrogen Fixation is carried out by bacteria
  - a) E coil b) Rhizobiam c) vibrio d) None of these
- 7) Thin Layer chromatography is an example of
  - a) Adsorption chromatography b) Partition chromatography
  - c) Gas chromatography d) size exclusion chromatography.
- 8) The mobile phase in Paper chromatography.
  - a) solid b) Gas c) Liquid d) All of these.
- 9) The reaction between Acetaldehyde and organo lithium compounds gives
  - a) Primary alcohol b) secondary alcohol c) Tertiary alcohol d) Ketone.
- 10) organo aluminium compounds are mild
  - a) Lewis acids b) Lewis base c) neutral d) All of these