



Shree H.N. Shukla College of Science Rajkot
B.Sc. (Sem- V) (CBCS)
CHEMISTRY: [501]
Unit test Paper-2018

[Time: 1:00 Hour]
Date: 26/07/2018

[Total Marks: 30]
Time: 10:00 to 11:00

Q.1: Answer the following question in short:

[08]

- 1) What is an operator?
- 2) Give operator of addition?
- 3) Define operator of subtraction?
- 4) Which orbital are denoted as t_{2g} orbitals?
- 5) What is symbol of crystal field splitting energy?
- 6) Give equation to calculate CFSE for octahedral crystal field?
- 7) _____ Orbital are lower energy in octahedral field?
- 8) Give the order of strength of Br^- , CN^- and NH_3 ?

Q-2: Attempt any THREE out of FOUR:

[06]

- 1) Define High spin and low spin complexes?
- 2) Define Pairing energy?
- 3) Explain π -acid ligand?
- 4) Define line operator?

Q-3: Attempt any TWO out of FOUR:

[06]

- 1) Explain Hamiltonian operator?
- 2) Give CFSE value for d^4, d^5, d^6 systems in strong and weak Oh ligand field?
- 3) According to CFT explain structure and magnetic property of $[CoF_6]^-$
- 4) Derive the energy equation for a particle moving in one dimensional box?

Q-4: Attempt any TWO out of FOUR:

[10]

- 1) Discuss the factor affecting splitting energy?
- 2) Discuss splitting of d-orbital in octahedral field?
- 3) Explain any three preparation method of metal carbonyl?
- 4) Derive equation of particle in three dimensional box.

