

VITTHALBHAI PATEL & RAJRATNA P.T. PATEL SCIENCE COLLEGE
VALLABH VIDYANAGAR
INTERNAL TEST-2019
B.Sc. (Semester-V)



Subject: INORGANIC CHEMISTRY (US05CCHEO3)

Date: 05-10-2019

Day: Saturday

Time: 11.00 a.m. to 12.15 p.m.

Total Marks: 25

Q:1 Choose the most appropriate option for the following: [05]

1. Point group of SF₆ molecule is
(a) T_d (b) D_{3h} (c) D_{6h} (d) O_h
2. The colouration of metal complex depends on
(a) ligand field strength (b) metal ion (c) magnetic strength (d) number of ligand
3. The operators operating on more than one variable are called Operators.
(a) Linear (b) Laplacian (c) Vector (d) Unitary
4. Which one of the following will give opposite predictions of inertness according to VBT & CFT ?
(a) d³ (b) d⁶ (c) d⁵ (d) d⁸
5. How many microstates are possible for t_{2g}² configuration ?
(a) 6 (b) 12 (c) 18 (d) 15

Q:2 Using suitable example, Prove that C_{3v} is an abelian point group. [05]

OR

Q:2 Prove giving proper example: S_nⁿ = E for n = even number [05]

Q:3 Explain : "[V(H₂O)₆]⁺³ is green in colour". [05]

OR

Q:3 Discuss the splitting of d-orbitals in tetrahedral field. [05]

Q:4 Give the brief account on Normalization and Orthogonality. [05]

OR

Q:4 Derive a three dimensional wave equation for a wave travelling in y-direction and described as $y(x,t) = f(x) \cdot \phi(t)$. [05]

Q:5 Determine the stability constant and composition of a complex experimentally using Spectrophotometric method. [05]

OR

Q:5 Explain base hydrolysis reactions of 6-coordinated Co(II) ammine complexes along with the mechanisms in detail. [05]
