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A-1292

M. Sc. (Sem.-I) (Reg. & Eve.) Examination

March/April – 2015

Inorganic Chemistry : Paper - 1

(New course)

Time : 3 Hours] [Total Marks : **70**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **M. Sc. (Sem.-I) (Reg. & Eve.)**

Name of the Subject :

☛ **Inorganic Chemistry : Paper - 1**

☛Subject Code No. : **1 2 9 2** ☛Section No. (1, 2,.....) : **Nil**

Seat No. :

Student's Signature

(2) Attempt all the questions.

(3) Figures to the right indicate full marks.

(4) Answer of all questions to be written in same answer books.

1 Answer briefly any three of the following: **18**

(a) Give a brief account on one dimensional Harmonic oscillator.

(b) Explain step up and step down operators of angular momentum.

(c) Show that the angular momentum operators $\hat{L}^2 z$ and $\hat{L} z$ commute.

(d) Give Russel- Saunders term for d^2 configuration.

2 Answer briefly any three of the following: **18**

(a) State and explain the great orthogonality theorem and give its significance.

(b) Construct character table of the C_{3v} point group.

(c) Explain reducible and irreducible representation with suitable examples.

(d) What is matrix ? Derive matrix transformation for plane of symmetry.

3 Answer briefly any three of the following: **18**

(a) What is acid hydrolysis ? Discuss factors affecting acid hydrolysis reaction.

(b) Explain Photometry method to follow rate of reaction in metal complexes.

(c) Give a brief note on conjugate base mechanism.

(d) Define labile and inert complexes. Discuss in brief various factors responsible for such behavior.

4 Answer briefly any three of the following: **16**

(a) Expain: Hamiltonian operator, Reduced mass,Moment of inertia, Linear operator.

(b) Explain spin orbit coupling .

(c) Explain reaction without metal ligand bond cleavage and reaction of co-ordinated ligands.

(d) Write a note on kinetic applications of CFT.
