

SB-2701

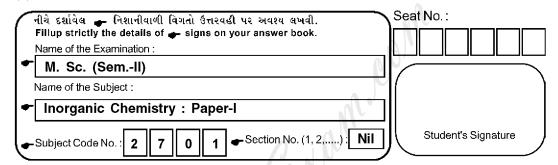
M. Sc. (Sem.-II) (Regular & Eve.) Examination March/April - 2011

Inorganic Chemistry: Paper - I
(New Course)

Time: 3 Hours [Total Marks: 70]

Instructions:

(1)



- (2) Attempt all the four 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:

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- (a) Describe an experimental set-up for determining the magnetic anisotropy of a single crystal. How will you calculate the gram molecular susceptibility of a crystal?
- (b) What is meant by 'orbital contribution to the magnetic moment.' Explain quenching of orbital contribution giving suitable example.
- (c) Write short note on diamagnetism and derive the molar diamagnetic susceptibility equation.
- (d) Define:
 - (i) Paramagnetism.
 - (ii) Gram susceptibility.
 - (iii) Magnetic induction.
 - (iv) Pole strength.
 - (v) Magnetic moment.
 - (vi) Magnetic susceptibility.

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- Answer briefly any three of the following:

 (a) Give a brief outline of bonding in bi- and tri-nuclear metal carbonyls.
 (b) Explain the preparation and properties of nitrosyl halides of Fe, Co and Ni.
 (c) How is vibrational spectroscopy helped in determination of geometries of metal nitrosyls? Give your answer with
 - suitable example.

 (d) Explain indirect synthesis of metal carbonyls involving
 - (i) Grignard reagent and
 - (ii) Metal compounds.
- 3 Answer briefly any three of the following:

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- (a) Give importance and requirements with reference to crystallinity of an inorganic polymer.
- (b) Discuss, in brief, the structures, properties and uses of polyphosphazenes.
- (c) Explain viscometry method for determination of molecular weight of an inorganic polymer.
- (d) Explain chemical and stereo chemical variability in inorganic polymer.
- 4 Answer briefly any three of the following:

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- (a) Describe the Faraday method for determining magnetic susceptibility of solid substance.
- (b) State and explain curie-weiss law. Write significance of weiss constant in the equation.
- (c) What are π -acceptor ligands? Discuss in detail the nature of bonding involved in metal carbonyls.
- (d) Explain branching and cross linking in inorganic polymers with suitable example.

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