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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)

नीचे दशांशविक निशानीवाणी विगतो उत्तरवही पर अवश्य लपवी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
<input type="text" value="M. Sc. (Sem.-II)"/>	<input style="width: 100%; height: 100%;" type="text"/>
Name of the Subject :	
<input type="text" value="Inorganic Chemistry : Paper-I"/>	
Subject Code No. : <input type="text" value="2"/> <input type="text" value="7"/> <input type="text" value="0"/> <input type="text" value="1"/>	Section No. (1, 2,.....) : <input type="text" value="Nil"/>

- (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 : 18

- (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.

- 2 Answer briefly any **three** of the following : 18
- (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 : 18
- (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 : 16
- (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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