* D P P - 1 3 8 6 *

DPP-1386

M. Sc. (Sem. II) (Reg., Eve. & S.F.) Examination

April / May - 2016

Inorganic Chemistry : Paper - I

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. 2) (REG., EVE. & S.F.)**
Name of the Subject :
☛ **INORGANIC CHEMISTRY - 1**
☛Subject Code No. : **1 3 8 6** ☛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 sheet.

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

(a) What is diamagnetism ? Explain the origin of diamagnetism.

(b) Describe the Gouy method for determining magnetic susceptibility of solid substances.

(c) Give an account of temperature independent paramagnetism with suitable example.

(d) Write a short note on diamagnetism and Pascal constant.

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

(a) What are metallic carbonyls ? Give classification of carbonyls.

(b) Discuss the structure and bonding of $Os_3(CO)_{12}$

(c) How is vibrational spectroscopy helpful in determination of geometries of metal nitrosyl ? Give your answer with suitable example.

(d) Explain the preparation and properties of nitrosyl halides of Fe, Co and Ni.

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

(a) Give the classification and the limitations of inorganic polymers.

(b) What is crystallinity ? Describe X-ray diffraction method for determining of percent crystallinity of polymer.

(c) Explain molecular weight, number average and weight average in inorganic polymers.

(d) Explain chemical and stereochemical variability in inorganic Polymers.

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

(a) Explain the terms :

(i) Pole strength

(ii) Magnetic susceptibility

(iii) Magnetic induction .

(b) What is EAN rule? Calculate EAN for any two from the following :

(i) $Fe_2(CO)_9$

(ii) $Ni(CO)_4$

(iii) $\left[Co^{-}(CO)_3\left(NO^{+}\right)\right]^{0}$

(c) Write a short note on spin orbit coupling.

(d) Discuss, in brief, the structure, properties and uses of poly-phosphazenes.
