Vidya Prasarak Mandal's

# B. N. Bandodkar college of science, Thane-400 601.

## A.T.K.T. EXAMINATION, Aug-2011.

## S. Y. B. SC.

## Chemistry-II

**Day :** **TIME : 3 hrs**

**Date : 0 -08-2011** **MARKS: 90**

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**N.B. : 1) All questions are compulsory**

**2) Figures to the right indicate full marks.**

**3) Use of log tables/non-programmable calculator is allowed.**

**4) Answers to the two section should be written on the same Answer**

**Section - I**

| | | | |
|---|---|---|---|
| Q1. | A | "Boron molecule is paramagnetic" Explain this using M. O. theory | 3 |
| | B | Anwer any three of the following | |
| | i | Construct the M. O. diagram for fluorine molecule. Calculate the Order and explain magnetic behaviour of the molecule | 4 |
| | ii | Explain the geometry of PCl5 giving in detail type of hybridization involved | 4 |
| | iii | Draw the M. O. diagram for Carbon dioxide molecule. Explain the Bond Order and magnetic behaviour of the molecule | 4 |
| | iv | With suitable examples explain what do you mean by formal charge | 4 |
| | v | Explain " concept of Resonance" What are the limitations of VBT ? | 4 |
| Q 2. | A | Give the electronic configuration of the first three elements of 3d - Transition series. | 3 |
| | B | Anwer any three of the following | |
| | i | Explain oxidation states of 3d Transition series | 4 |
| | ii | On the basis of VBT, explain the structure of [ Fe (CO)5} | 4 |
| | iii | Write a note on " Ostwald ripening" in gravimetric analysis | 4 |
| | iv | Explain the use of oxine in gravimetric analysis | 4 |
| | iv | Explain Drying and Ignition in gravimetric analysis | 4 |
| Q 3. | A | Explain electrorefining of copper | 3 |
| | B | Anwer any three of the following | |
| | i | Write a note on magnetic separation | 4 |
| | ii | Explain roasting and calcination | 4 |
| | iii | Write a note on "Hoope's process" | 4 |
| | iv | Explain effect of temperation and concentration in the oxidation of SO2 to SO3 | 4 |
| | **v** | Explain effect of temperation and pressure in the manufacture of Ammonia by Haber's process | |

Section – II

| | | | |
|---|---|---|---|
| Q4 | A | Give the electronic configuration of the first three elements of Group 16 elements | |
| | B | Anwer any three of the following | |
| | i | Write a note on HSAB concept of acids and bases | 4 |
| | ii | Explain hydrogen bonding | 4 |
| | iii | What are metal carbonyls ? and how are they classified ? | 4 |
| | iv | Write a note on Usanovich concept | 4 |
| | v | Explain nature of metal – carbon bond in organometallic compounds. | 4 |
| Q 5 | A | Give the electronic configuration of the first three halogens | 3 |
| | B | Anwer any three of the following | |
| | i | Give differences between halogens and pseudohalogens | 4 |
| | Ii | Give an account of preparations and uses of cyanogens | 4 |
| | Iii | On the basis of VBT, explain the structure of XeF2 | 4 |
| | Iv | Write a note on Cytochromes | 4 |
| | v | Explain the structure and bonding in XeF4 | 4 |
| Q 6 | A | What are the causes of water pollution ? | 3 |
| | B | Anwer any three of the following | |
| | i | How the metal is protected from corrosion using cathodic protection | 4 |
| | Ii | Comment on economic importance of corrosion | 4 |
| | Iii | What are the causes of soil pollution ? | 4 |
| | iv | Explain the various types of corrosion | 4 |
| | v | Write a note on ‘Environment protection Act’ | 4 |