ATKT/Additional examination

**B.N. Bandodkar College of Science, Thane**

June 2015

**Four$^{th}$ Semester End examination, ~~March~~ June-2015**

**USCH402**

**Duration: 2 hrs and 30 min.** **Total Marks:75**

**N. B. :**

1. All the questions are compulsory
2. Figures to the right indicates full marks
3. Use of log table/ non programmable calculator is allowed

Q.1 a Write a note on HSAB concept. 4

**OR**

a Explain conjugate acid-base pair. 4

b Write a note on hydrogen bonding. 4

**OR**

b Write a note on physical and chemical properties of metal carbonyls. 4

c Explain trends in the following properties 4

i) Atomic size ii) Metallic character iii) Density iv) Conductivity with respect to group 15 elements.

**OR**

c Explain bonding in metal carbonyls on the basis of VBT. 4

d Explain acid and base on the basis of Arrhenius theory and mention its advantages. 4

**OR**

d Explain limitations of Arrhenius theory of acid base. 4

e Give the applications of organometallic compounds. 4

**OR**

e Write a note on 18 electron rule. 4

Q. 2 a Give any one preparation, properties, structure and bonding in $XeF_6$ 4

**OR**

a Write a short note on chlorophyll. 4

b Give any method of preparation, properties and uses of thiocyanogen 4

**OR**

b Discuss the trends in chemical properties of 17 group elements . 4

c Discuss the structure of $XeOF_4$ 4

**OR**

c Write a short note on myoglobin. 4

d Give the electronic configuration of the elements of group 18. 4

**OR**

d Discuss the similarities between halogens and pseudohalogens. 4

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| | e | Explain the Variation of colour among the halogens. | 4 |
| | | **OR** | |
| | e | Explain the Chlorine has higher electron affinity than fluorine. | 4 |
| Q. 3 | a | Define the corrosion and explain different types of Corrosion? | 4 |
| | | **OR** | |
| | a | What is water pollution? Explain its causes. | 4 |
| | b | Explain the electrochemical theory of corrosion with suitable example. | 4 |
| | | **OR** | |
| | b | Explain in detail the treatment of water waste. | 4 |
| | c | What are the factor which influence the corrosion? | 4 |
| | | **OR** | |
| | c | What is soil pollution? explain its control measures. | 4 |
| | d | Explain the cathodic and anodic protection of metal. | 4 |
| | | **OR** | |
| | d | Giving an example ,explain the role of an individual in overcoming crises of Pollution. | 4 |
| | e | Write a short note on electroplating and organic coating method for protection of corrosion. | 4 |
| | | **OR** | |
| | e | Write a short note on Ganga action plane 1985. | 4 |
| Q. 4 | a | Give the electron configuration of last three elements of group 16. | 3 |
| | | **OR** | |
| | a | What are organometallic compounds ?Give its two examples. | 3 |
| | b | Give the preparation of $XeF_2$ | 3 |
| | | **OR** | |
| | b | Give the properties of cynogen. | 3 |
| | c | What is direct and indirect loss of corrosion, explains with suitable example? | 3 |
| | | **OR** | |
| | c | What are the control measures of water pollution? | 3 |
| | d | Give two methods of preparations of $Ni(CO)_4$ | 2 |
| | | **OR** | |
| | d | Give any two chemical reactions of $Ni(CO)_4$ | 2 |
| | e | Name the type of hybridization in $XeF_4$ | 2 |
| | | **OR** | |
| | e | Give the different types of oxyfluoride. | 2 |
| | f | What is differential aeration principle? | 2 |
| | | **OR** | |
| | f | Give the effects of soil pollution. | 2 |

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