

(i) Printed Pages: 4]

Roll No.

(ii) Questions :9]

Sub. Code :

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**B.A./B.Sc. (General) 4th Semester
Examination**

1047

CHEMISTRY

(Inorganic Chemistry-B)

(Same for B.Sc. Microbial and Food Technology)

Paper - XIII

Time : 3 Hours]

[Max. Marks : 22

Note :- Attempt *five* question in all, selecting at least *one* question from each unit. Question No. 1 is compulsory.

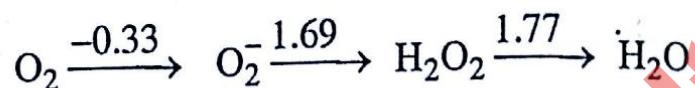
1. (a) What happens when cerium (III) nitrate is treated with alkaline KMnO_4 ?
- (b) What are transuranic elements ?
- (c) Why H_2Se is stronger acid than H_2S ?

N-73

(1)

Turn Over

- (d) What is the electrode potential for O_2/H_2O half reaction ?



- (e) Out of $Zn(NH_3)_2$, NH_4Cl , KNH_2 which of the following shows amphoteric behavior in liquid ammonia ?
- (f) Which is stronger acid : BF_3 or BCl_3 ? 1×6

Unit-I

2. (a) Describe the extraction of lanthanides from Monazite.
- (b) What is Lanthanide Contraction and give its consequences ? 2,2
3. (a) What are nuclear fuels ? Give preparation of plutonium.
- (b) Why actinides have greater tendency to form complexes compared to lanthanides ? 2,2

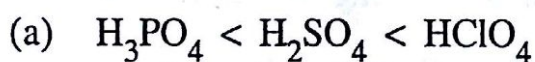
N-73

(2)

Unit-II

4. Explain the trend of basic strength of primary, secondary and tertiary amines (in gaseous as well as aqueous media). 4

5. Explain the trend of acidic strength of the following molecules :

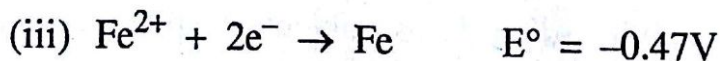
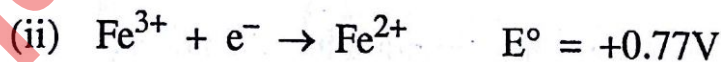


Unit-III

6. (a) Calculate E° for the reaction :



Given :



(b) Why lithium is the strong reducing agent ?

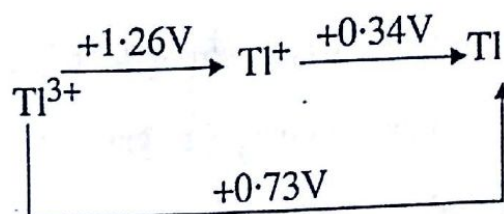
Explain with a well labelled redox cycle. 2,2

N-73

(3)

Turn Over

7. (a) Consider the Latimer diagram for thalium :



Construct a frost diagram and explain :

- (i) Stability of Tl^+
 - (ii) Which one is a strong oxidant.
- (b) Give an example of Pourbaix diagram. 3,1

Unit-IV

8. (a) Describe the following on role of a solvent in chemical reaction :
- (i) Dielectric constant
 - (ii) Heat of fusion and heat of vapourisation
- (b) Why NH_4Cl is an acid in liquid NH_3 and K_2SO_4 is a base in liquid SO_2 . 2,2
9. (a) Discuss the important advantages of liquid sulphur dioxide as solvent in spite of its toxic nature.
- (b) Explain ammonolysis with at least two examples. 2,2

N-73

(4)