Nepal College of Information Technology

**Unit Test**

Fall 2012

Program : BE CE Time : 2 hrs

Semester : (I) FM : 70

Subject : Chemistry\_CE PM : 35

* *Candidates are requested to give their answer as far as practicable in their own words.*
* *The figure in the margin indicates the full marks*
* ***Attempt ALL question***

1. a. Derive Henderson Hasselbalch equation for acidic buffer. Calculate the pH of a buffer solution containing 100 ml of 0.2M NH4Cl and 50 ml of 0.3 M ammonia solution in which 0.01 m HCl is added . ( pKa= 4.74) 8

b. Define buffer solution. Explain the mechanism of basic buffer with suitable example. 7

2. a. Explain the mechanism for the hydrolysis of primary alkyl halide with aq. NaOH. 8

b. Define elimination reaction.Explain E1 mechanism with suitable example. 7

3. a. Trans isomer is more stable than cis isomer, Justify. 3

b. Differentiate enantiomers and diastereomers with examples. 6

c. Define resolution of racemic mixture. How is meso compounds differ from racemic mixture. 6

4 a. Write the difference between electrolytic cell and galvanic cell.Explain the applications of electrochemical series 7

b. Define Standard electrode potential.The emf of the cell Zn/Zn++(0.1)// Cd++ (x)/Cd has been found to be equal to 0.3305 v at 298 k.Calculate the value of x. 8

Given,

EZn++/Zn = -0.76v

ECd++/Cd = -0.40v

5. a. Define ionization potential.Discuss the factors affecting the ionization potential.Mention the applications of ionization potential. 7

b. Define electron affinity and electronegativity. 3

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