Nepal College of Information Technology

**Unit Test**

Fall 2012

Program : BE ELX Time : 2 hrs

Semester : (I) FM : 70

Subject : Chemistry 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). Define nucleophilic substitution reaction. How do you account for the fact that an SN2 reaction proceeds with complete stereochemical inversion, where as SN1 reaction proceeds with recemization plus inversion. (9)

b). What are carbocations and carbanions? Based on inductive effect, explain the stability of 10,20 and 30 carbocations. (6)

2. a). What do you mean by electrophilic aromatic substitution reaction? Write the mechanism of nitration of benzene. (7)

b). How does E2 reaction differ from E1 reaction in mechanistic and kinetic aspect? Give the mechanism of addition of HBr to CH3-CH2=CH2 in the presence of light and peroxide. (8)

3. a) what is ionization potential? What are the factors affecting the ionization potential? Why the first ionization energy of Nitrogen(N) is greater than Oxygen(O). (9)

b). what is electron affinity ? why electron affinity value of chlorine is higher than that of fluorine although the electronegative value of these elements are in the reverse order. (6)

4. a) what is the difference between electrolytic and galvanic cell. Calculate the emf of a cell at 250C from the following reducing potential data. (9)

E0Ni/Ni++(0.1M) = +o.25V E0Ag/Ag++(0.25)= -0.80V

b). Compare any four characteristic properties of S-block and P-block elements. (6)

5) Write short notes on (any two) 5x2=10

a) Hyper conjucation

b) Enantiomer and diastereomer

c) Application of electrochemical series.

d) Variation of atimic size in periodic table.

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