nepal college of information technology

Assessmemt

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| Level: Bachelor | Fall | Year : 2014 | |
| Programme: BE ELX/CE | | Full Marks: 100 | |
| Course: Chemistry | | Time : 3hrs. | |
| *Candidates are required to give their answers in their own words as far as practicable.* | | |
| *The figures in the margin indicate full marks.* | | |
| Attempt all the questions. | | |

1. a) Write the mechanism of the basic buffer with suitable examples. Calculate the concentration of sodium format that most be present in a 0.1 0M solution of formic acid to produce of PH of 3.80 [ Ka for formic acid is 1.8 x 10-4 . (4+4)

b) How does electrode potential originate ? Define standard electrode potential .Write the cell notation and cell reaction of Zn-Cu cell.Calculate the EMF of a Daniel cell at 250 C, when the concentration of ZnSO4 and CuSO­­4­ are 0.001 M and 0.1 M respectively, the standard potential of the cell is 1.2 V. (4+3)

2. a) Give reasons:

i) The electronegativity of oxygen is greater than carbon

ii) What is electron affinity? Electron affinity of chlorine is smaller than sodium. Why? (2+2)

b) Write the general characteristics of S and P block elements. (4)

c) Why are 3d –series elements called transition elements? Give their characteristic on the basis of valency. (2+5)

3. a) What is optical activity? Give the stereoisomers of tartaric acid, would you expect the meso tartaric acid is optically active? Explain. (2+5)

b) Differentiate between racemic mixture and meso-compound. What is carbocation? 30 carbocation is more stable than other carbocations. Why? (4+4)

4. a) what is substation reaction? Write the mechanism and stereo chemistry of SN1 and SN2 reaction. (2+3+3)

b) Write the mechanism of following reaction? (7)

C6H6 + conc.HNO3 C6H5NO2 + H2 O

5. a) What do you mean by soil pollution? Mention it’s major Source, Adverse effect and possible remedies. (8)

b) What is the photo chemistry behind ozone layer deplection? (7)

6. a) How do thermoplastic polymers differ from thermosetting polymers? Give the application and preparation of Bakelite (4+4)

b) Differentiate between condensation polymerization and addition polymerization (7)

7. Write short notes: (Any Two) (5+5)

a) Application of Electrochemical series

b) Elimination reaction.

c) Transition elements are formed color compound.

d) Green House effect