Nepal College of information technology

Unit test

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| Level: Bachelor | Semester Fall | Year : 2014 |
| Programme: BE CE/ELX | | Full Marks: 70 |
| Course: Chemistry | | Time : 3hrs. |

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| *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 acidic buffer with suitable examples. Calculate the PH of the solution form by mixing 0.5 gm of equivalent of KOH is added to 400 ml of 0.1N acetic acid. pKa for acetic acid is 4.74. (4+4)

b) How is single electrode potential of Zn electrode measured experimentally? From the following given data. Calculate

i) Write the electrode reaction.

ii) Write the cell reaction.

iii) Calculate the emf of the cell at 270C when both the electrodes are coupled together.

E 0Mg/Mg++ = +2.370 V

E 0Fe/Fe++ = +0.440V

R = 8.314 J/mol/K

F = 96500 C

[Mg++] = 0.1 M [Fe++] = 0.01 M (3+4)

2 a) Give reasons:

i) Ionisation energy of nitrogen is greater than oxygen.

ii) Electron affinity of bromine is higher than chlorine. (2+2)

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

c) Zn+2 salt is white while Cu+2 salt is blue. Give reason. Why are transition elements are mostly color. (4+3)

3 a) What is geometrical isomerism? Write the possible isomerism of But-2-ene. Which isomer is most stable? (3+4)

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) What is anti-markonikovs rule? Explain with example and write its mechanism. (2+5)

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

a) Electrochemical series.

b) Elimination reaction.

c) Transition elements are formed complex.

d) Nerts equation.