Pokhara University

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| Level: Bachelor | Semester – Fall | Year : 2011 |
| Programme: BE | | Full Marks: 100 |
| Course: Chemistry | | Pass Marks: 45 |
| 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. |

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|  | 1. Explain Bohr’s explanation for the origin of H- spectrum. Derive an equation for the radius of Bohr’s third orbit for H-atom. Calculate the energy of the electron moving in this orbit. (h=6.62×10-34JS,m=9.1×10-31kg,e=1.6×10-19C, ∈o=8.85×10-12kg-1M-3A2) 2. Explain the statement position and momentum of a moving particle can’t be measured exactly at the same time. Calculate the wavelength of the particle of mass 10.5×10-31 kg moving with the velocity equal to 1/100th of the velocity of light. | 10  5 |
|  | 1. State and derive Ostwald’s dilution law. Write its limitations. 2. Explain the reducing abilities of metals using reduction potential. Calculate the emf of the cell at 300C when the given electrodes are coupled together.   E0 Ni/Ni++= 0.25, E0 cd/cd++ = 0.40V  R = 8.314 J K-1mo1-1 F = 96500C  [Ni++]=(0.01M) (cd++] = [0.1M] | 9  6 |
|  | 1. What is difference between electron affinity and electronegativity? Explain the role of electronic configuration on electron affinity. Although fluorine is highest electronegative element but its electron affinity is lower than that of chlorine. Explain. 2. Why do transition elements form significant number of complexes? Explain with reason why Ti3+ compounds are coloured but those of Ti4+are colourless. | 9  6 |
|  | 1. Explain hybridization in H2O and CH4 molecules and explain the cause of variation is bond angles in these molecules. 2. Explain why ice has lower density than water. | 10  5 |
|  | 1. Write IUPAC name of the following compounds: 3. CH3COOC2H5 4. CH3-CHBrCHCl-COOH 6. CH3CH2-CH2CHO 7. What is the difference between hyperconjugation and conjugation? Explain the effect of inductive effect on the strength of acids with suitable examples. 8. What are carbocations? Explain the stability of carbocations. | 5  6  4 |
|  | 1. Give the mechanism of the reaction:   C6H6+HNO3 C6H5NO2+H2O  Δ   1. State markonikov’s rule and explain with suitable example. 2. Distinguish between thermoplastic and thermosetting plastic (polymer). | 5  5  5 |
|  | Write short notes on **any two:**   1. Green house effect 2. Ozone deplation 3. Azimuthal quantum number 4. Acidic buffer solution | 2×5 |