Uva Wellassa University of Sri Lanka
Faculty of Science and Technology
Department of Science and Technology
100 Level First Semester Examination – Sep/Oct 2015
SCT 131-1 Chemistry I

Uva Wellassa University

Instructions to candidates
Duration: One (01) hour
Number of questions: Two (02)
Answer All Questions
Mark allocation: 100 mark

1 a. Predict and draw the shape of following molecules using VSEPR theory. Show steps in calculation. (15 mark)

i. PCl_5
ii. SO_2Cl_2
iii. BF_3
iv. I_3^-
v. H_2O

b. In Which molecules do you expect ot see a permanent dipole moment. Draw the direction of the net dipole moment of those molecules. (10 mark)

c. Darw the molecular orbital diagram and occupation of show electrons in molecular orbitals of O_2 (10 mark)

d. Indicate hybridization of each Carbon atom in following molecules (15 mark)
i. CH_3-CH_3 ii. $CH_3CH{=}O$ iii.$CH_3CH{=}CH_2$

2. a. Draw the Stagered and Gauche conformation of $CH_3CH_2CH_3$ molecule. (10 mark)

b. Identify the whether staggered or gauche form will have lowest energy. Give reasons for your choice. (10 mark)

c. Draw the structure of Boat and Chair conformation of cyclohexane. Indicate axial and equitorial positions. (15 mark)

d. Define following terms and give ean example for each. (15 mark)
i. Configurational isomers
ii. Geaometrical isomers
iii. Stero isomers

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