JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
MID SEMESTER EXAMINATION-2015
B.Tech II SEMESTER

COURSE CODE: 14B11BT211   MAX. MARKS: 30
COURSE NAME: General Chemistry
COURSE CREDITS: 4   MAX. TIME: 2HRS

Note: All questions are compulsory.

Section A   (Marks: 1x 6=6)

Q1. There are two different compounds with molecular formula C_2H_6O. One of these isomers has a much higher boiling point than the other. Explain why?

Q2. How many stereoisomers are possible for an organic compound having 4 chirality centres?

Q3. Why equatorial methyl cyclohexane is more stable as compared to axial methyl cyclohexane?

Q4. Draw newman projections of chair conformation of cyclohexane.

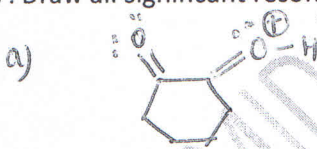Q5. Assign the configuration of the chirality centre in the following compound.
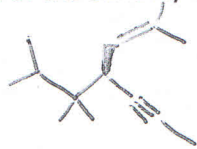
Q6. For the following compound, will the lone pair on the nitrogen atom be more or less basic then the lone pair on the oxygen atom
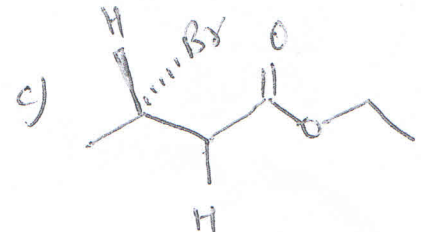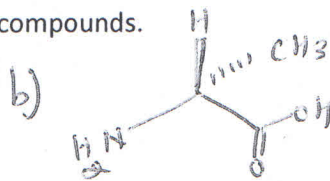

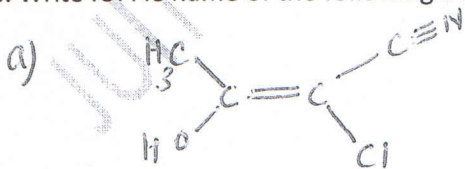**Section B**   (Marks: 3x3=9)

Q7. Draw all significant resonance structures of the following compounds.

a)   b)

Q8. Write IUPAC name of the following organic compounds.

a)   b)   c)

Q9. Explain conformational analysis and potential energy profile of *n*-butane. Identify the most stable and least stable conformation of *n*-butane.

Q10. Explain S_N1 and S_N2 mechanism for nucleophilic substitution reactions by taking suitable example and compare the two mechanisms with regard to
a) Stereochemistry
b) Kinetic order
c) effect on rate of doubling [RX]
d) effect on rate of doubling [Nu]

Q11.a) What is chemical resolution? Why it used? Discuss detailed methodology of chemical resolution. [3]
b) When 0.15g of compound X is dissolved in 10.0 ml of pyridine and placed in same cell 10.0cm in length. The observed rotation is -0.47 (at standard condition) calculate specific rotation. [2]

Q13.a) Explain the formation of bonding and antibonding molecular orbital using 2s & 2p atomic orbitals. [4]
b) How bond order is related to stability of molecule? [1]