



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2010/2011

OPEN DISTANCE AND e-LEARNING

**FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF
SCIENCE**

SCH 102: ORGANIC CHEMISTRY I

DATE: Friday 16th December 2011

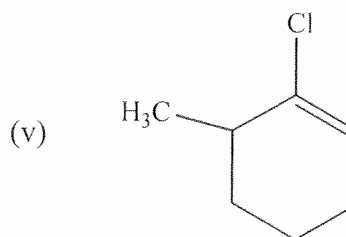
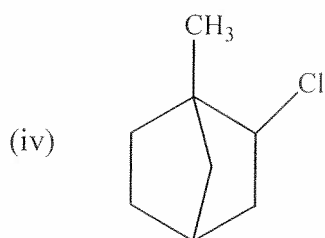
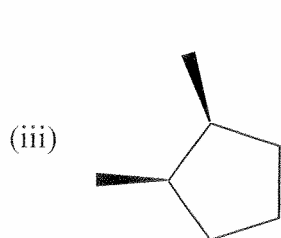
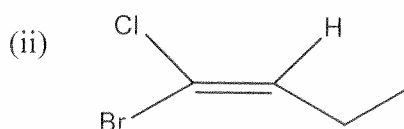
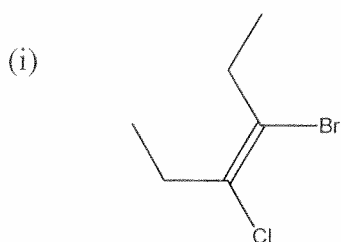
TIME: 8.00a.m – 10.00a.m

INSTRUCTIONS

Answer ALL questions.

[Atomic Masses: C = 12.01, H=1.00, O = 16.00]

1. Provide systematic (IUPAC) names for the following compounds indicating stereochemistry where possible. [7 Marks]



2. Draw the structure of the following compounds including stereochemistry where possible.

(i) *trans*-2-Bromocyclopentanol

(ii) 1-Ethoxy-2,3,3-trimethylbutane

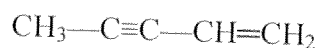
(iii) 2-Bromo-4-ethyl-7-methyl-oct-4-ene

(iv) 6-Chloro-4-ethyl-3-methyl-octane

(v) 5-chloro-2-methyl-3-heptyne

[7 Marks]

3. (a) (i) Indicate the type of hybridization for each carbon atom in the following compound:



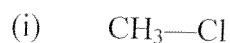
[5 Marks]

- (ii) Draw three dimensional formula for CH_2ClBr .

[2 Marks]

4. (a) Indicate by using δ^+ , δ^- the direction of polarity in indicated bonds for the following compounds.

[4 Marks]



- (b) Write down Lewis and condensed structures for **any two** possible isomeric compounds with molecular formula $\text{C}_3\text{H}_8\text{O}$.

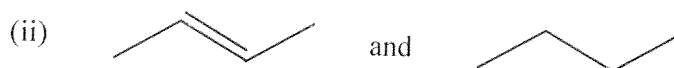
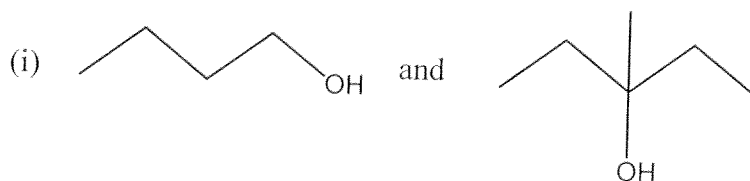
[4 Marks]

5. (a) Combustion of 2.88 g of an insect sex attractant pheromone gave 6.68 g of CO_2 and 2.26 g of H_2O . If the molecular mass of the pheromone is 114 g, calculate the molecular formula of the pheromone.

[8 Marks]

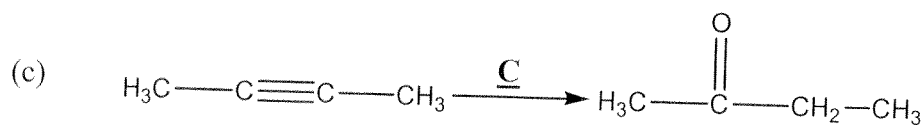
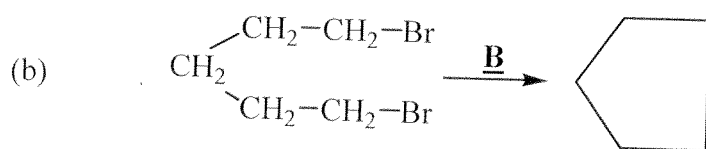
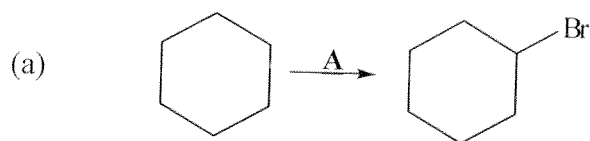
- (b) Give a simple visual chemical test you would perform to differentiate between the following pair of compounds.

[6 Marks]



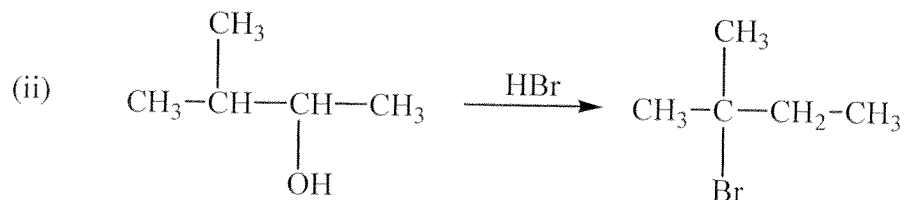
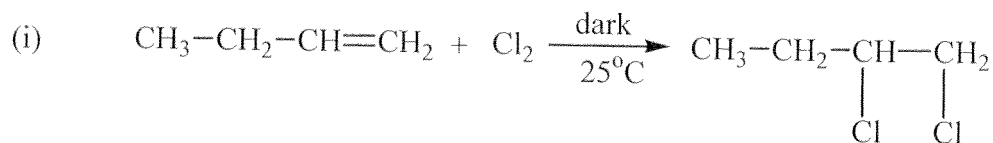
6. Write the reagents (A to C) required for the following reactions:

[3 Marks]



7. (a) Using curly arrows, write reaction mechanism for each of the following reactions:

[8 marks]



(b) Ethane can be brominated to bromoethane using molecular bromine in the presence of light. Write down the initiation, propagation and termination steps for this free radical reaction.

[6 marks]

8. Write structures of the major organic product(s) that are expected in the following reactions:

[10 marks]

