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THE OPEN UNIVERSITY OF SRI LANKA

B.Sc. Degree Programme and Stand Alone Courses
in Science - 2012/2013

CMU2221/CME4221 - Organic Chemistry 1

CONTINUOUS ASSESSMENT TEST II

Ques No.	Max.	Marks
1	36	
2	24	
3	30	
4	30	
Total	120	

Date: Thursday, 11th April 2013

Time: 4.00 p.m. – 5.30 p.m.

IMPORTANT: This paper carries a total of 120 marks. Those who score above 100 are awarded 100 marks. Those who score less than 100 are awarded the mark they score.

1. (a) Designate the E/Z configuration of each of the double bonds in the following molecules. Label the groups according to the priority order.

(i) 	(ii) 	(iii) 	(iv)

- (b) Assign R/S configurations for the following molecules according to Cahn-Ingold-Prelog convention indicating the priority order of groups.

(i) 	(ii) 	(iii)

- (c) State whether the following molecules are chiral or achiral.

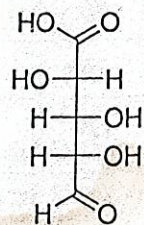
(i) 	(ii) 	(iii) 	(iv) 	(v)

- (d) State whether the following compounds are optically active or inactive.

(i) 	(ii) 	(iii) 	(iv) 	(v)

(36 Marks)

2. Given below is one of the stereoisomers (A) of 5-formyl-2,3,4-trihydroxypentanoic acid. Fill the cages with relevant information and structures (if there are any).



A

(i) Total number of (theoretically possible) stereoisomers of the acid =

(ii)	(iii)	(iv)	(v)
Enantiomer of A	Diastereomer of A	C-4 epimer of A	Meso isomer of the acid

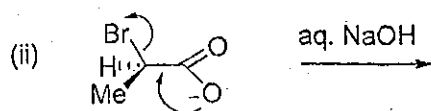
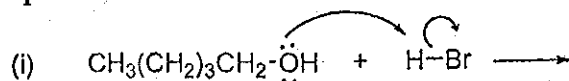
(24 marks)

3. (a) Giving reasons state the most probable mechanistic pathway (S_N1 , S_N2 , etc.) for the following.

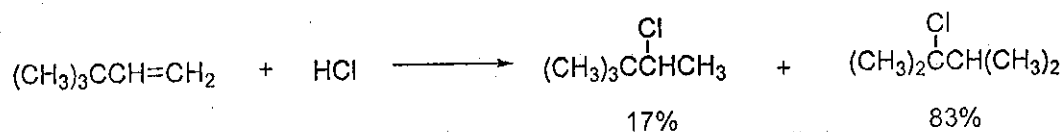
Reactants	Mechanism	Reasons
(i) $ \begin{array}{c} \text{Cl} \\ \\ \text{CH}_3\text{CH} \xrightarrow{\text{H}_2\text{O}} \\ \\ \text{CH}_2\text{CH}_3 \end{array} $		
(ii) $ \begin{array}{c} \text{Cl} \\ \\ \text{C}_6\text{H}_{11} \xrightarrow[\text{EtOH}]{\text{NaOH}} \end{array} $		
(iii) $ \text{CH}_3\text{CH}_2\text{Br} \xrightarrow[\text{DMSO}]{\text{NaCN}} $		

(30 marks)

4. (a) Complete the mechanisms of the following reactions and give the structures of the final products.



- (b) Addition of HCl to 3,3-dimethyl-1-butene gives two products as shown below. Explain for the formation of the two products in given percentages.



(30 marks)
