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Name:

THE OPEN UNIVERSITY OF SRI LANKA
B.Sc Degree Programme and
Stand Alone Courses in Science - 2010/2011
CMU2221/CME4221 - Organic Chemistry I
ASSIGNMENT TEST II

Ques No	Max	Marks
01	40	
02	35	
03	25	
Total	100	

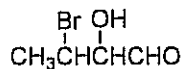
Date: Wednesday, 23rd February 2011

Time: 4.00 – 5.30 p. m.

Answer ALL questions

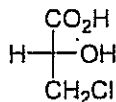
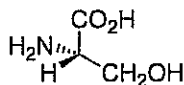
1. (a) (i) Draw Fischer projection formulae of all possible stereoisomers of the following compound and label them as A, B, C, ... etc.

*Note: If the number of isomers drawn exceeds the actual number of possible isomers **NO MARKS** will be awarded.*



- (ii) Identify a pair of enantiomers from above. (give labels)
- (iii) Identify a pair of diastereomers from above. (give labels)
- (20 marks)

- (b) Indicating the priority order of the groups, determine the configuration of stereocenters of the following compounds using Cahn – Ingold – Prelog rules.



.....

.....

(10 marks)

- (c) A sample of 2-methyl-1-butanol showed specific rotation $[\alpha]_D = -1.15^\circ$. $[\alpha]_D$ of (S)-(-)-2-methyl-1-butanol is -5.75° . Calculate the following.
- (i) Percent optical purity of the sample.

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(ii) Percent of (*S*) and (*R*)-2-methyl-1-butanol in the mixture.

(*S*)-2-methyl-1-butanol%.

(*R*)-2-methyl-1-butanol%

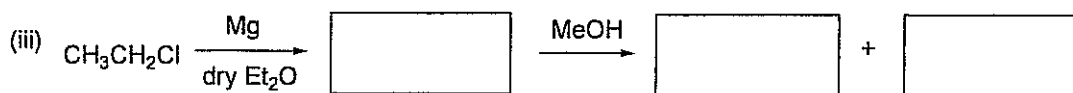
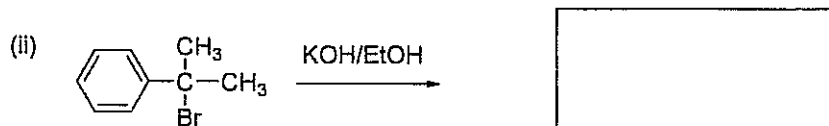
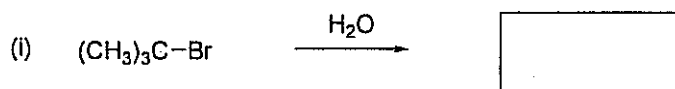
(10 marks)

2. (a) What are the common types of reactions shown by alkyl halides?

.....

(05 marks)

(b) Give the structures of possible major product of each of the following reactions.



(15 marks)

(c) Show how you would carry out the following conversion.



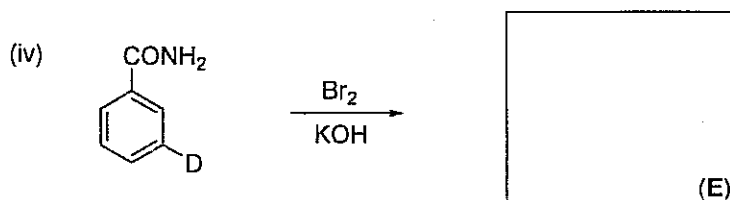
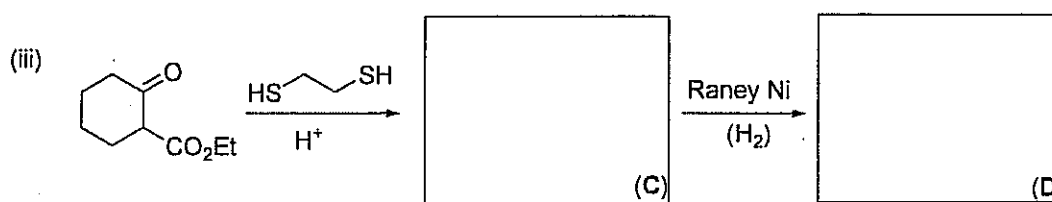
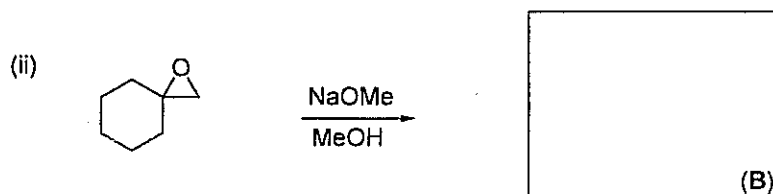
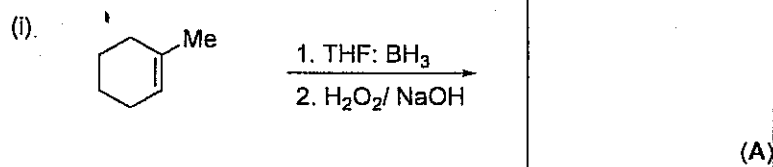
(15 marks)

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3. Give the structures of the products A – E in the following reactions.



(25 marks)

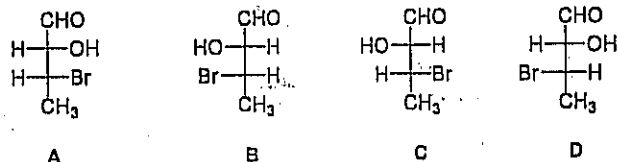
THE OPEN UNIVERSITY OF SRI LANKA

B.Sc Degree Programme and Stand Alone Courses in Science - 2010/2011

CMU2221/CME4221 - Organic Chemistry I

ASSIGNMENT TEST II - Answer guide

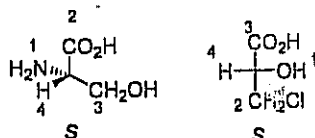
1. (a) (i)



(ii) A and B or C and D

(iii) A and C or B and C or A and D or B and D

(b)



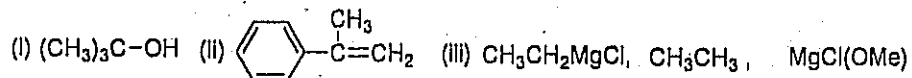
$$(c) (i) \text{ percent optical activity of the sample} = \frac{[\alpha]_D \text{ of sample}}{[\alpha]_D \text{ of } (S)\text{-}(-)\text{-}2\text{-methyl-1-butanol}} \times 100$$

$$= \frac{-1.15^\circ}{-5.75^\circ} \times 100 = 20\%$$

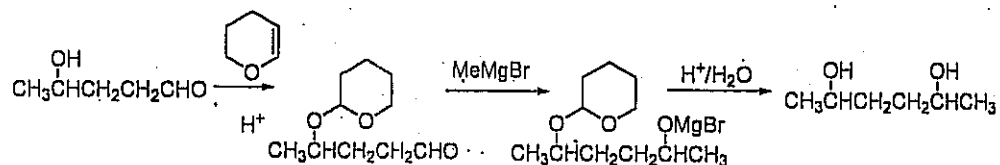
(d) (ii) (*S*)-2-methyl-1-butanol = 60% (*R*)-2-methyl-1-butanol = 40%

2. (a) nucleophilic substitution, elimination

(b)



(c)



3.

