



EASTERN UNIVERSITY, SRI LANKA  
THIRD EXAMINATION IN SCIENCE-2010/2011 (APRIL/MAY' 2013)  
FIRST SEMESTER

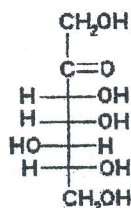
CH 301 CHEMISTRY OF NATURAL PRODUCTS

(Proper & Repeat)

Answer all questions

Time Allowed: One hour

1. (a) i. Draw the Haworth projection of anomer of the sugar given below



(10 Marks)

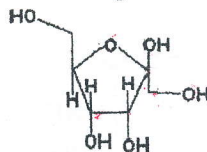
- ii. Draw the chair conformation of  $\alpha$ -D-glucopyranose.

(10 Marks)

- iii. Show the steps in mechanism for the cyclisation of the open form of D-glucose to pyranose form (*Hint*: Consider acid catalyzed reaction).

(20 Marks)

- (b) The following questions based on the sugar A.



Sugar A

- Is this sugar a ketose or an aldose?
- Draw an arrow pointing to the anomeric carbon.
- Indicate the OH group attached to C-4.
- Is this  $\alpha$  or  $\beta$  anomer?

(20 Marks)

Contd...

(c) i. What are Disaccharides?

ii. Give three examples of disaccharides and state the composition of each.

iii. Describe the formation of glycosides.

iv. Differentiate chemically between a reducing and non-reducing sugar.

(40 Marks)

2. (a) i. What are Homopolysaccharides?

(10 Marks)

ii. Give three examples of homopolysaccharides and state the composition of each.

(10 Marks)

iii. Write the structures of starch.

(10 Marks)

(b) i. What is muta-rotation? Explain with a suitable example.

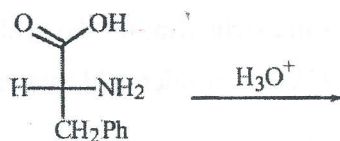
(10 Marks)

ii. Define the terms "amphoterism" and "isoelectric point".

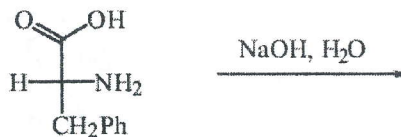
(10 Marks)

(c) i. Draw the products of the following reactions

I.



II.



(05 Marks)

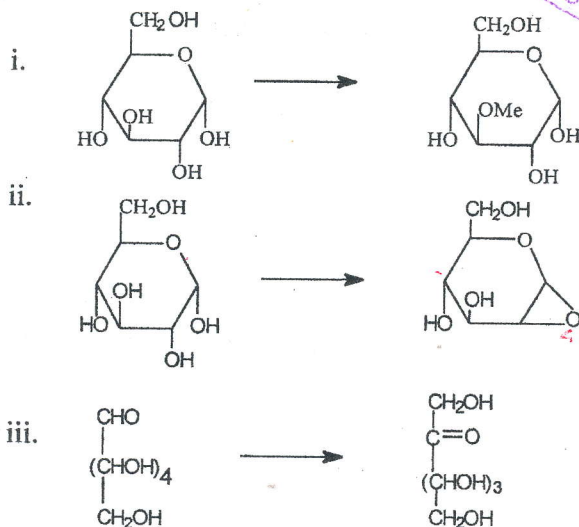
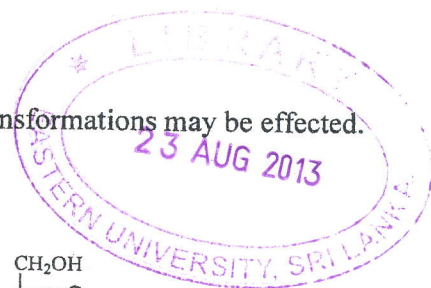
ii. Treatment of glucose with  $\text{HIO}_4$  gives results that confirm its aldohexose. What product(s) should be formed and how much of  $\text{HIO}_4$  should be consumed.

(10 Marks)

Contd...

(d). By means of equations show how the following transformations may be effected.

Give essential experimental conditions



(15 Marks)

(e) i. Write the cyclohexane configuration of menthol, isomenthol, neomenthol and neoisomenthol.

(10 marks)

ii. Give the isomeric natures of Citral and discuss a method to synthesis one of its isomers.

(10 marks)

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