Reg. No. | | | | | | | | | |

The Open University of Sri Lanka

B. Sc. Degree Programme - 2014/2015

Faculty of Natural Sciences

Department of Chemistry

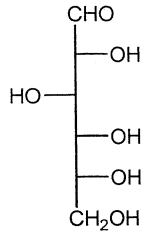
CMU3124 -Chemistry of Biomolecules

CONTINUOUS ASSESSMENT TEST I

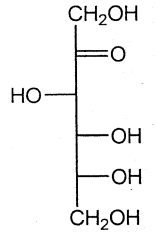
Ques No.	Marks
1	
2	
3	
4	
5	
Total	

Date: Sunday, 12th July 2015 Time: 2.30 p.m.– 3.30 p. m.

1. (i) Draw the cyclic structures of D-glucose and D-fructose.



D-glucose



D-fructose

(10 Marks)

(ii) Draw the structure of sucrose, formed from glucose and fructose.

(5 Marks)

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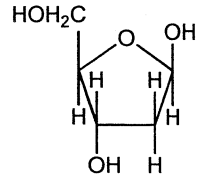
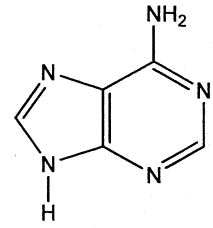
2. (i) Draw the structure of nucleotide formed from 2-deoxyribose, adenine and phosphate.



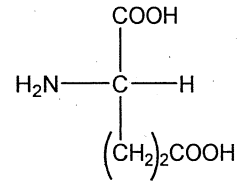
2-Deoxyribose



Adenine

(10 Marks)

(ii) Draw the predominate form of glutamic acid at pH = 0, 3, 8, 11 given that pI = 3.22, $pka_1 = 2.19$, $pka_2 = 9.67$ and pka_3 (side chain) = 4.2.



glutamic acid

pH = 0

pH = 3

pH = 8

pH = 11

(20 Marks)

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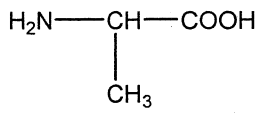
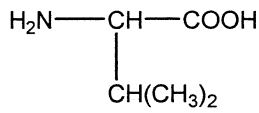
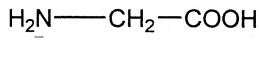
3. (i) Write the structural formula for the tripeptide Val.Ala.Gly.



Alanine



Valine



Glycine

(10 Marks)

(ii) 2,4-Dinitroflurobenzene is used for N-terminal analysis of peptides. Write down the reactions involved when the tripeptide Val.Ala.Gly is treated with 2,4-dinitroflurobenzene and then hydrolysed with 6 N HCl.

(15 Marks)

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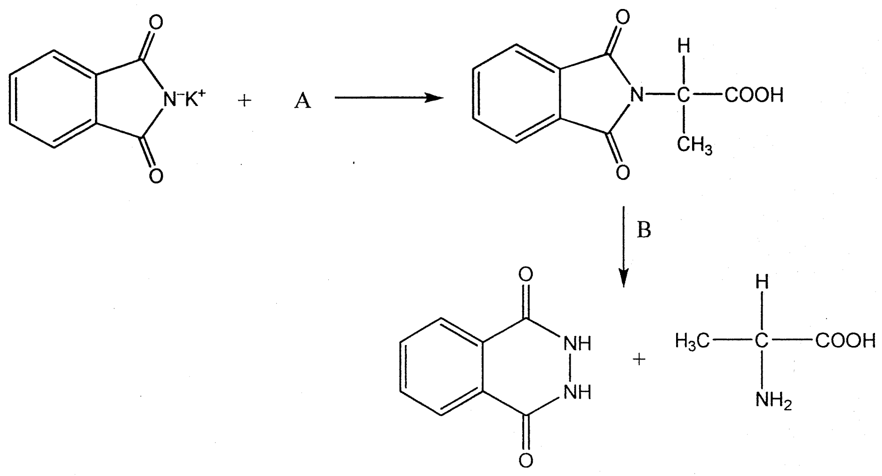
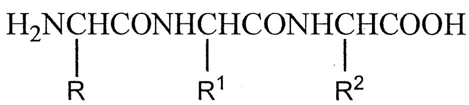
4. Indicate the missing reagents and products in the following synthetic schemes.

(i)



A B (10 Marks)

5. What is the structure of the reaction product obtained when the tripeptide (E) is treated with phenylisothiocyanate followed by mild acid hydrolysis? Write down the reaction involved and explain the advantage of the reaction used to determine the N-terminal amino acid.



(E)

(20 Marks)

THE OPEN UNIVERSITY OF SRI LANKA

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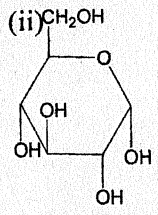
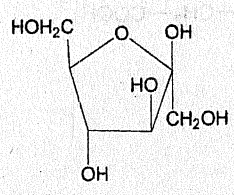
CMU 3124 – Chemistry of Biomolecules

Continuous Assessment Test I –Answer Guide

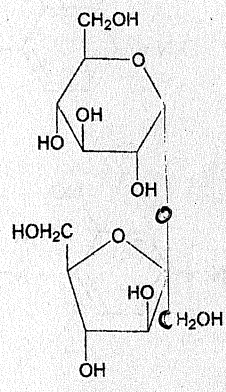
1. (i)

(ii)



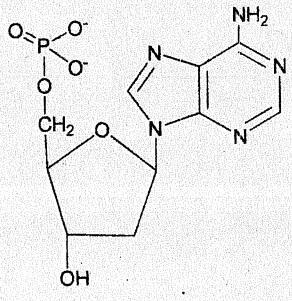


(ii)

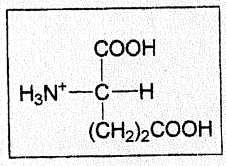


Sucrose

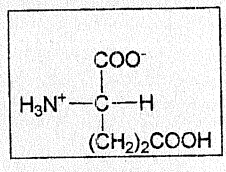
2. (i)



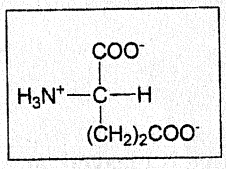
(ii)



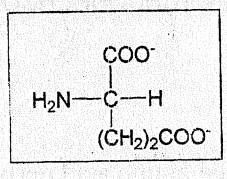
pH=0



pH=3

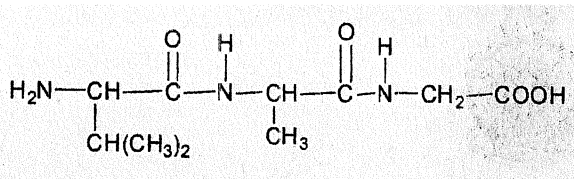


pH=8

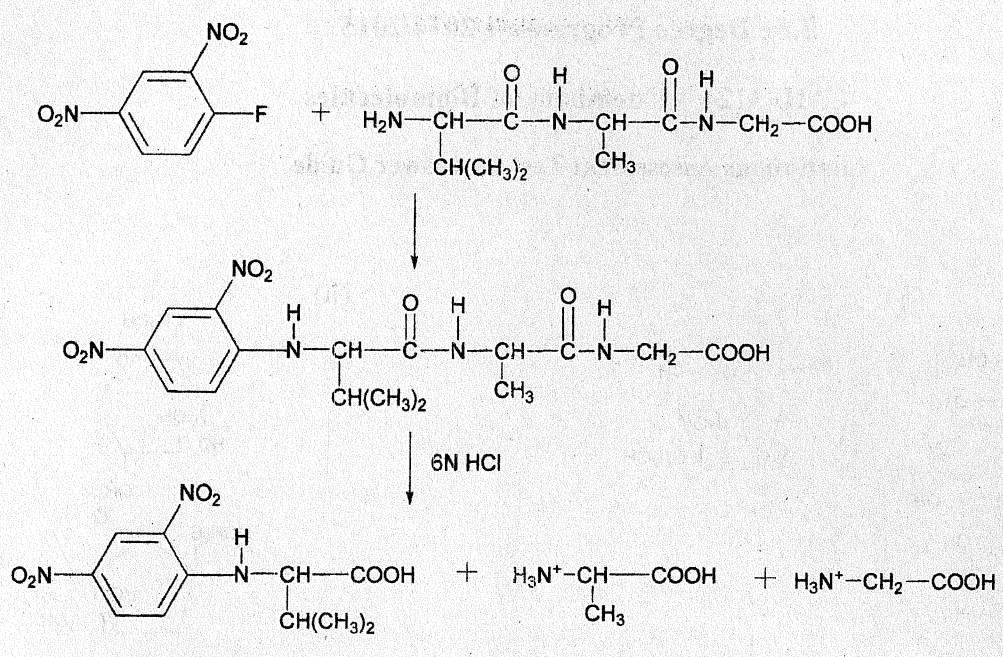


pH=11

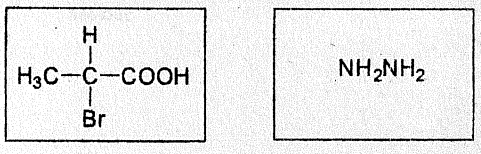
3. (i)



(ii)

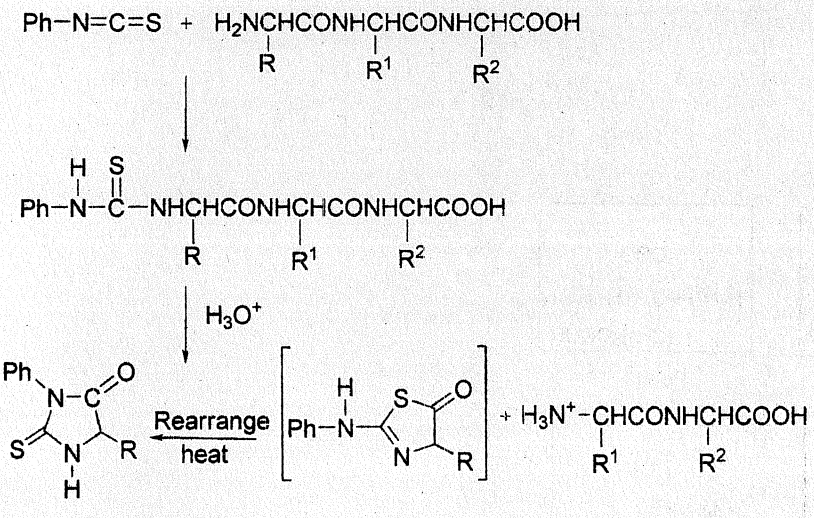


4. (i)



A B

5.



Since, the hydrolysis conditions are mild, only the terminal amino acid derivative is cleaved, and the rest of the peptide chain is intact. It is then recycled through further Edman degradation in an automated cycle that permits the successive cleavage and identification of a sequence of AA residues.