THE OPEN UNIVERSITY OF SRI LANKA
B.Sc DEGREE PROGRAMME/STAND ALONE COURSES 2009/10
LEVEL 5 – CONTINUOUS ASSESSMENT TEST 1I (OBT)

CHU3139 – BIO CHEMISTRY 1
DURATION : 1 ½ HOURS

Date: 12^{h} October 2009 Time: 4.00-5.30pm

Reg.No: ----------

Question	Marks
1	
2	
Total	

Instructions to candidates:

This question paper has 4 pages and 2 questions. Answer all questions only in the space provided. Attached sheets will not be graded.

01. Two reactions involving L-amino acids and the value of their respective free energy changes are as follows.

Glutamate + pyruate $\leftrightarrow$ α – ketoglutarate + alanine $\Delta G^{\circ} = -0.24$ kcal/mol

Glutamate + oxaloacetate $\leftrightarrow$ α – ketoglutarate + aspartate $\Delta G^{\circ} = -1.15$ kcal/mol

(i) Under standard conditions, is the net formation of alanine and oxaloacetate from aspartate and pyruate thermodynamically favourable or unfavourable? Give reasons?

(20 marks)

(ii) Suppose that at 25°C the molar concentrations of reactants and products are as follows.
[pyruate] = [aspartate] = 10^{-2}M
[alanine] = 10^{-4}M
[oxaloacetate] = 10^{-5}M

Is the spontaneous synthesis of alanine and oxaloacetate possible under these conditions? Why? Clearly show your calculations.
Faraday constant is 96500 $Cmol^{-1}$ (1J=1CV). Clearly show your calculations.
R = 8.314 $Jmol^{-1}K^{-1}$, 1 calorie = 4.184J

(30 marks)

02. (a) Compare cyclic and non-cyclic electron flow in the photosynthetic organisms.

(09 marks)

(b) i. What are complexes, I, II, III and IV found in mitochondria?

(06 marks)

ii. What are the reactions catalyzed by each complex?

(08 marks)

(c) What are the ways in which glucose provides energy for cells?

(08 marks)

(d) i. What are the two methods of removal of amino groups from amino acids?

(04 marks)

ii. What is the difference between these two methods?

(06 marks)

(e) Explain how cane sugar provides energy on catabolism.

(09 marks)

Reg No:.....

Name:.....

Address .....

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