



Registration number :.....

THE OPEN UNIVERSITY OF SRI LANKA

Q. No	Max	Marks
1	50	
2	50	
Total	100	

B.Sc Degree Programme 2014/15

CMU3126 – LEVEL 5 – BIOCHEMISTRY

Continuous Assessment Test 1

Duration : One Hour

Date : 26th July 2015

Time: 9.00-10.00 am

Instructions to candidates: Answer all questions only in the spaces provided. Answers written in additional sheets will not be graded.

01. (a) What is the difference between anabolism and catabolism?

(06 marks)

(b) i. What is the importance of citric acid cycle? Explain.

(06 marks)

ii. "Citric acid cycle only functions under aerobic conditions" Justify the statement.

(06 marks)

iii. Some of the intermediates of the citric acid cycle are used for different biosynthetic pathways. List down three examples.

(06 marks)

(c) What is meant by anaplerotic pathways? Explain the importance of them.

(06 marks)

(d) Name the enzyme complexes which help to form the proton gradient along the respiratory chain and state their functions.

(12 marks)

(e) What are the main features of light independent reaction (dark reaction) of the photosynthesis process? List three of them.

(08 marks)

02. (a) What is meant by the turn over number/frequency of an enzyme?

(06 marks)

(b) i. Describe what is meant by the active site of an enzyme?

(06 marks)

ii. Active sites possess some special features. List three of them.

(06 marks)

iii. How does the substrate attract to the active site? Explain.

(08 marks)

(c) i. Write down Michealis-Menten equation (M-M equation) for competitive inhibition and define terms.

(08 marks)

ii. From M-M equation, derive Lineweaver Burke plot for competitive inhibition.

(10 marks)

iii. Explain one major use of Lineweaver Burke plots drawn at different inhibitor concentrations.

(06 marks)

Copyright reserved



THE OPEN UNIVERSITY OF SRI LANKA

B.Sc Degree Program 2014/15

CMU 3126 – LEVEL 5 – BIOCHEMISTRY

Assignment Test 1

Duration : One Hour

Date : 26th July 2015

Time: 9.00-10.00 am

Instructions to candidates: Answer all questions only in the space provided. Additional sheets will not be graded.

01. (a) What is the difference between anabolism and catabolism?

Anabolism refers to the formation of large molecules from small molecules where as catabolism refers to the breaking down of molecules to small entities.

(b) i. What is the importance of citric acid cycle? Explain.

-Provide energy by producing ATP.

-Provide many intermediates as precursors for many biosynthetic pathways.

ii. "Citric acid cycle only functions under aerobic conditions" Justify the statement.

In order to function the citric acid cycle, it needs NAD^+ and FAD .

NAD^+ and FAD are produced in the mitochondrial respiratory chain by oxidizing NADH and FADH_2 .

Above oxidation takes place only under the aerobic conditions. Therefore, citric acid cycle functions only under aerobic conditions.

iii. Some of the intermediates of the citric acid cycle are used for different biosynthesis pathways. Explain using three examples.

1. Oxaloacetate is used to synthesize Aspartic acid by simple transamination of keto acid.
2. α - keto glutarate is used to synthesize Glutamic acid.
3. Succinyl CoA is used to synthesize Prophyrin, heme, and cytochromes.
4. α - keto glutarate is used to synthesize Purines.
5. Citrate is used to synthesize fatty acids and sterols.

(c) What is meant by anaplerotic pathways? Explain the importance.

When intermediates of citric acid cycle are used for other purposes, concentrations of intermediates decrease. Therefore, there are mechanisms by which they can be replaced. These mechanisms are called anaplerotic pathways.

It maintains the substrates in the CAC at optimum concentrations.

(d) Name the complexes which help to form the proton gradient and state their functions.

Complex I – NADH dehydrogenase – Receives electrons from NADH.

Complex II- Succinate dehydrogenase – Transfer electrons from Succinate.

Complex III – Ubiquinone Cytochrome c oxido reductase – Transport electron to cytochrome c.

Complex IV – Cytochrome oxidase – Accept electrons from cytochrome c

Complex V – Proton translocating ATP synthase – Site for ATP synthesis

(e) What are the main features of light independent reaction (dark reaction) of the photosynthesis process? List three of them.

Occurs at stroma of the chloroplast.

Inputs are NADH, ATP and CO₂.

Form NADP⁺, ADP and sugar.

Carbon of sugar product comes from CO₂.

First step is carbon fixation.