

Uva Wellassa University, Sri Lanka
Btech. Science and Technology
End Semester Examination- Semester 1
December -2008

BIO 323-1 – Metabolism

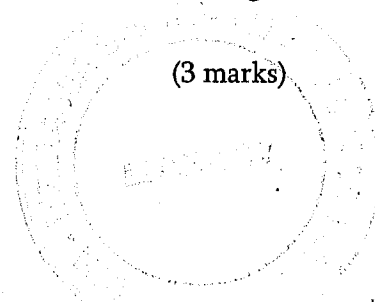
Answer four (4) questions only

Time: One (01) hour

1. (a) What is meant by metabolism? What are the major roles (give 3 functions) of this process within the body?
(6 marks)
 - (b) Name four different metabolic pathways/ reactions of glucose metabolism. Indicate the place where each pathway is occurring in the body.
(8 marks)
 - (c) How does Acetyl Co A formed from pyruvate.
(3 marks)
 - (d) What is meant by oxidative phosphorelation and substrate level phosphorelation?
(8 marks)
2. (a) What is Cori cycle? Indicate two important functions of this cycle.
(8 marks)
 - (b) What are the important functions of hexose monophosphate pathway?
(4 marks)
 - (c) What is meant by the followings?
 - i) gluconiogenesis (3 marks)
 - ii) β oxidation of fatty acids (4 marks)
 - iii) Calvin cycle (3 marks)

Indicate a major location where the above processes are taking place within living organisms.

(3 marks)



3. (a) Draw a graph to explain the variations in the concentrations of ketone bodies, glucose, and fatty acids when a person is starving.
(3 marks)
- (b) A bull had been pulling a cart for several hours and now non essential amino acids have started to degrade in its muscles. Briefly describe how the produced NH_4^+ is transported to the liver.
(6 marks)
- (c) If your diet is rich in Alanine but deficient in Aspartate, will you show signs of Aspartate deficiency? State the reason.
(4 marks)
- (d) When swimming for 400m medley at Olympics, what can you state about the glycogen metabolism in Michael Phelps muscles? Very briefly describe.
(12 marks)
4. (a) Draw the Urea cycle with relevant enzymes.
(8 marks)
- (b) α -Amylose is an unbranched glucose polymer. Why would this polymer not be as effective a storage form for glucose as glycogen?
(5 marks)
- (c) List out the main factors determining the ubiquitination.
(4 marks)
- (d) 'A' has eaten 6 ice creams within 30 minutes. Describe what happens at β cells of his pancreas after eating the ice creams.
(8 marks)
5. (a) A strain of mice has been developed, that lack the enzyme phosphorylase kinase. Yet, after strenuous exercise, the glycogen stores of this strain of mice are depleted. Explain how this is possible.
(5marks)
- (b) You have starved some rabbits for an experiment. Briefly describe the function of Fructose 2,6- bisphosphate in their liver.
(5 marks)
- (c) Draw a simple structure of ubiquitinated protein molecule.
(3 marks)
- (d) Mrs. G. Reedy had eaten ten eggs for her breakfast. Very briefly list out the steps of catabolism of the protein she had taken.
(12 marks)