

UNIVERSITY OF RUHUNA– FACULTY OF AGRICULTURE

Second Examination in B.Sc in Agriculture Resource Management
Technology (ARMT)/ B.Sc in Agri. Business Management (ABM) (Part II)
December, 2016

Food and Nutrition (FS2201)
(Theory)

Answer five (05) questions including question no. 1 & 2

Time: 3 hrs

-
1. A) Briefly explain the chemical and mechanical digestion that takes place in the mouth?
(25 marks)
- B) Briefly discuss the interrelationship of carbohydrate, protein and fat metabolisms in fed state.
(25 marks)
- C) Briefly describe the *Cori cycle* while paying a special attention for its importance in human metabolism.
(25 marks)
- D) Discuss the role of nitrogen containing molecules in human metabolism (25 marks)
2. Critically analyze the following statements. State whether you agree or disagree with the statement, and justify your answer with facts. (25 marks each)
- A) Pyruvate possesses both catabolic and anabolic functions in the body.
- B) Cholesterol has only negative significance to the human body.
- C) Although an enzymatic digestion is not taken place at large intestine, its contribution for the digestion process is highly important.
- D) Glutamic acid plays a pivotal role in the metabolism of amino acid
3. A) Under aerobic conditions, pyruvate is further oxidized to water and carbon dioxide. Name and illustrate the above process using appropriate chemical reactions.
(25 marks)
- B) Other than producing energy, the process described in section (A) provides intermediates for many biosynthetic pathways. Briefly describe five (05) such involvements of the above process.
(25 marks)

C) Final product of the pentose phosphate pathway (PPP) can be change depending on the metabolic needs of the cell. Justify this statement using schematic diagram.

(25 marks)

D) Briefly describe how the glycogen metabolism fulfills its major functions in the body.

(25 marks)

4. A) Briefly explain the reaction catalyzed by Acetyl CoA carboxylase and importance of this reaction on fat metabolism. (15 marks)

B) i) Name two essential fatty acids and their available food sources (10 marks)

ii) Briefly explain the health effects of consuming saturated, unsaturated, and trans-fatty acids. (20 marks)

C) i) What do you mean by ketosis? (10 marks)

ii) Outline the conditions and utilization of ketone bodies in human metabolism (15 marks)

D) Briefly describe the steps of beta oxidation of a fatty acid that contains 18 carbon atoms (30 marks)

5. A) Define the term "homeostasis" with a suitable example? (20 marks)

B) Differentiate between endocrine and exocrine glands. (20 marks)

C) Distinguish among the three hormonal classes while giving at least two examples each. (30 marks)

D) Write short notes on following. (15 marks each)

i) Importance of insulin in blood glucose regulation

ii) Role of anterior pituitary hormones in human metabolism

6. A) Explain the three states of nitrogen balance in metabolism (25 marks)

B) Explain the relationship between ornithine cycle and citric acid cycle (25 marks)

C) Describe a pathway that an amino acid can be subjected to gluconeogenesis (25 marks)

D) Explain the consequences of complete/partial block of any step in urea cycle in human metabolism (25 marks)