NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF APPLIED SCIENCES

MASTER OF SCIENCE IN SPORT SCIENCE AND COACHING

DEPARTMENT OF APPLIED BIOLOGY AND BIOCHEMISTRY

THEORY: BIOCHEMISTRY SSC 5103

DECEMBER 2001

3 HOURS (100 marks)

INSTRUCTIONS

Answer Four (4) Questions. Each question carries 25 marks. The mark value for each subdivision is given in brackets. Illustrate your answer where appropriate with large, clearly labelled diagrams.

1.(a) Write the general scheme of respiratory chain and explain the factors determining the direction of redox reactions. (16 marks)

(b) Explain the formation of Acetyl Co A from pyruvate. (9 marks)

2.(a) Set out in details the mechanism of muscle contraction. (17 marks)

(b) With the aid of diagram describe the possible fates of carbon atoms of amino acids as they are degraded. (8 points)

3. Give a full account of gluconeogenesis. Explain how the irreversible reactions of glycolysis are bypassed via a new set of reactions in gluconeogenesis. (25 marks)

4.(a) Outline briefly the regulation of citric acid cycle and the important control points. Name the enzymes involved. (17 marks)

(b) Describe the pathways of glycerol breakdown and synthesis. (8 marks)

5.(a) Compare and contrast the metabolic characteristics of slow and fast twitch muscle fibers. (16 marks)

(b) In what way are the proton gradients involved in the mechanism of ATP synthesis. (9 marks)

6. Write an essay on glycogen degradation and synthesis. Your answer should include the role of the enzymatic cascade. (25 marks)

END OF QUESTION PAPER

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