UNIVERSITY OF SWAZILAND

SUPPLEMENTARY EXAMINATION PAPER: JULY 2012

TITLE OF PAPER: BIOCHEMISTRY AND CELL BIOLOGY

COURSE CODE: B203

TIME ALLOWED: THREE HOURS

INSTRUCTIONS:
1. ANSWER ANY FOUR QUESTIONS
2. EACH QUESTION CARRIES TWENTY FIVE (25) MARKS
3. ILLUSTRATE YOUR ANSWER WITH LARGE AND CLEARLY LABELLED DIAGRAMS WHERE APPROPRIATE

SPECIAL REQUIREMENTS: NONE

THIS PAPER IS NOT TO BE OPENED UNTIL PERMISSION HAS BEEN GRANTED BY THE INVIGILATORS

Question 1

(a) What are carbohydrates? (8 marks)

(b) Explain concisely the essential features of glycolysis (12 marks)

(c) What is the importance of this process to living organisms? (5 marks)

[Total marks = 25]

Question 2

(a) Discuss the nature and significance of lipids in living organisms. (16 marks)

(b) Briefly explain the importance of acetyl co-enzyme A in cell metabolism. (9 marks)

[Total marks = 25]

Question 3

(a) Explain concisely the essential features of the pentose-phosphate pathway. (18 marks)

(b) What is the significance of this pathway in cell metabolism? (7 marks)

[Total marks = 25]

Question 4

(a) State the biological functions of proteins. (9 marks)

(b) The breakdown products of amino acids are given as ammonia, nitrogen and carbon skeletons. What happens to these products especially in higher organisms? (16 marks)

[Total marks = 25]

Question 5

(a) Distinguish between aerobic and anaerobic respiration. (7 marks)

(b) Explain how the citric acid cycle generates CO_2, ATP, NADH and $FADH_2$ in cellular respiration. (18 marks)

[Total marks = 25]

Question 6

Write concise notes **on two** of the following:

(a) Omega-3-fatty acids, (12½ marks)

(b) Enzymes, (12½ marks)

(c) Photosynthesis. (12½ marks)

[Total marks = 25]

END OF QUESTION PAPER