UNIVERSITY OF SWAZILAND

SUPPLEMENTARY EXAMINATION PAPER : JULY 2009

TITLE OF PAPER BIOCHEMISTRY & 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 ANSWERS 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? (5 marks)

(b) With reference to monosaccharides explain the following terms with examples, asymmetric carbon, isomers and epimers. (8 marks)

(c) Briefly describe the processing of pyruvate in anaerobic and aerobic organisms. (12 marks)

[TOTAL MARKS = 25]

QUESTION 2

(a) Outline the various functions carried out by proteins in living organisms. (8 marks)

(b) Name the various structural levels in proteins and outline the differences between them. (12 marks)

(c) What are conjugated proteins? (5 marks)

[TOTAL MARKS = 25]

QUESTION 3

(a) Distinguish between hydrolyzable and non-hydrolyzable lipids, with examples. (7 marks)

(b) Write short notes on the following:

(i) Sterols and steroids (9 marks)

(ii) Biological membranes (9 marks)

[TOTAL MARKS = 25]

QUESTION 4

(a) Outline the properties of enzymes. (7 marks)

(b) Discuss the various ways by which enzymes activity/action may be affected in living cells. (18 marks)

[TOTAL MARKS = 25]

QUESTION 5

(a) Describe the pentose phosphate pathway and explain the role of the enzymes involved in this process. (20 marks)

(b) What is the significance of this biochemical process in (a) above to living organisms. (5 marks)

[TOTAL MARKS = 25]

QUESTION 6

(a) Explain the term photosynthesis and indicate its significance to living organisms. (7 marks)

(b) Outline the essential features of the light and dark reactions of photosynthesis. (18 marks)

[TOTAL MARKS = 25]