

UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER 2007

TITLE OF PAPER: BIOCHEMISTRY & CELL BIOLOGY

COURSE CODE: B203

TIME ALLOWED: THREE HOURS

INSTRUCTIONS:

1. ANSWER 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) Write concise notes on simple carbohydrates, storage carbohydrates and structural carbohydrates with examples. (9 marks)
  - (b) Discuss the formation of disaccharides from monosaccharides. (8 marks)
  - (c) Explain mutarotation in monosaccharides. (8 marks)
- [25 MARKS]

**QUESTION 2**

- (a) What are the structural features and properties of the common fatty acids? (12 marks)
  - (b) Write all you know about Triacylglycerols or Triglycerides. (13 marks)
- [25 MARKS]

**QUESTION 3**

- (a) Briefly explain the various functions carried out by proteins in living organisms. (6 marks)
  - (b) Name the basic unit of proteins and describe its chemical structure and properties. (9 marks)
  - (c) What are the breakdown products of amino acids? Briefly discuss the fate of these products in eukaryotic organisms. (10 marks)
- [25 MARKS]

**QUESTION 4**

- (a) What are enzyme inhibitors and allosteric effectors/modifiers? (10 marks)
  - (b) Explain how a heavy metal (e.g. mercury) a poisonous salt (e.g. cyanide) and a pesticide (e.g. DDT) inhibit the action of enzymes in living organisms. (15 marks)
- [25 MARKS]

**QUESTION 5**

- (a) Glycolysis is one of the important biochemical processes that occur in all living cells. Discuss. (15 marks)

(b) What is the fate of pyruvate in anaerobic cells or organisms?

(10 marks)

[25 MARKS]

**QUESTION 6**

Write short notes on TWO of the following:

(a) Gluconeogenesis

(12½ marks)

(b) Pentose phosphate pathway

(12½ marks)

(c) Dark reactions of Photosynthesis

(12½ marks)

[25 MARKS]