UNIVERSITY OF ESWATINI

FINAL EXAMINATION PAPER: NOVEMBER 2018

TITLE OF PAPER:	INTRODUCTORY BOTANY
COURSE CODE:	BIO 101
TIME ALLOWED:	THREE HOURS
INSTRUCTIONS:	1. THIS PAPER IS DIVIDED INTO TWO SECTIONS. 2. ANSWER 2 QUESTIONS FROM EACH SECTION IN 2 SEPARATE BOOKLETS 3. ANSWER QUESTION 1 (COMPULSORY) AND ANY OTHER QUESTION FROM SECTION A 4. ANSWER ANY TWO QUESTIONS FROM SECTION B 5. EACH QUESTION CARRIES TWENTY FIVE (25) MARKS 6. USE CLEARLY LABELLED DIAGRAMS WHERE APPROPRIATE.

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

[PLEASE TURN OVER]

SECTION A

Question 1 (Compulsory)

(a). Briefly state the differences between the following:
- (i) Mitosis and Meiosis (4 marks)
- (ii) Eukaryotic and prokaryotic cells (2 marks)
- (iii) DNA and RNA (6 marks)
- (iv) Saturated and unsaturated fatty acids (2 marks)

(b). State the role of secondary metabolites (2 marks)

(c). State the role of the following in translation: mRNA, rRNA and tRNA. (6 marks)

(d). State any three functions of the plasma membrane. (3 marks)

Total= [25 Marks]

Question 2

Name three plant hormones and three mineral nutrients respectively and explain their physiological functions in plant growth. (25 marks)

Total= [25 Marks]

Question 3

Explain the different mechanisms of transport across the cell membrane. (25 marks).

Total= [25 Marks]

SECTION A (Answer any two questions from this section)

Question 4

(a) Provide an example at genus level of the following, including a schematic diagram:

(i) bacillus
(ii) coccus
(iii) staphylococcus
(iv) streptococcus
(v) spirochaete
(vi) spiral

(6marks)

(b) Match the structures in column A to their function in column B (8 marks)

COLUMN A	COLUMN B
(i) Cell wall	1. Attachment to surfaces
(ii) Endospore	2. Motility
(iii) Fimbriae	3. Protection from osmotialysis
(iv) Flagella	4. Protection from phagocytes
(v) Glycocalyx	5. Resting
(vi) Pili	6. Protein synthesis
(vii) Plasma membrane	7. Selective permeability
(viii) Ribosomes	8. Transgender of genetic material.

(c) Why is an endospore referred to as a resting structure? (3 marks)

(d) Briefly explain using diagrams how a gram-positive and a gram-negative cell wall of a bacterium differ. (3 marks)

(e) Given that the optimal conditions for bacterial growth are never met, explain the logistic curve of *E-coli* (5 marks)

PTO

Question 5

(a) Briefly explain how fungal pathogen can be differentiated into different divisions using the methodology asexual and sexual spores (3 marks)

(b) Provide a schematic diagram of the following:
- (i) A perithecium
- (ii) An apothecium
- (iii) A cleistothecium
- (iv) A apycinidium
- (v) An acerrvulus
- (vi) A basidiocarp (6 marks)

(c) Provide an example with diagrams of the following:
- (i) A green algae
- (ii) A brown algae
- (iii) A liverwort
- (iv) A fern (4 marks)

(d) Explain the social importance of fungi in the welfare of humans (6 marks)

(e) Write an essay on the importance of algae in the environment. (6 marks)

[TOTAL MARKS=25]

Question 6

(a) Explain what you understand by the term "virus". (5 marks)

(b) Explain the different morphological classes of viruses. (8 marks)

(c) Write an essay on the replication cycle of a typical virus. (6 marks)

(d) Write an essay on the relevance of viruses to humans? (6 marks)

[TOTAL MARKS = 25]

END OF EXAMINATION PAPER