

UNIVERSITY OF ESWATINI
RE-SIT EXAMINATION PAPER: 2020/2021

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 ANY TWO 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: Answer Any Two Questions.

Question 1

(a) Discuss the functions, deficiency and toxicity of the following plant nutrients. (15 marks)

- (i) Nitrogen
- (ii) Phosphorus
- (iii) Potassium

(b) Write short notes on

- (i) Osmosis
- (ii) Passive diffusion
- (iii) Active transport

(5 marks)

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(2.5

[TOTAL MARKS=25]

Question 2

(a) Discuss the functions of secondary metabolites in plants. (5 marks)

(b) Discuss the primary, secondary, tertiary and quaternary structure of proteins. (20 marks)

[TOTAL MARKS=25]

Question 3

Explain the role of any five plant cell organelles and explain their roles in the cell. (25 marks)

[TOTAL MARKS=25]

SECTION B: Answer Any Two Question From This Section

Question 4

- (a) Draw a diagram of a bacterium. (6 marks)
- (b) State the function(s) of the following: (8 marks)
- i. A glycocalyx
 - ii. A pilus
 - iii. A cell wall
 - iv. A flagellum
 - v. A fimbriae
- (c) Starting with a single cell, determine the population of bacteria at the third generation of growth. (2 marks)
- (d) Draw a logarithmic and an exponential growth curve of a bacterium. (2 marks)
- (e) Explain the logistic curve of a typical bacterium. (7 marks)

[TOTAL MARKS=25]

Question 5

- (a) Define the term "resolving power" of a microscope. (2 marks)
- (b) Fill in the following table (7 marks)

Objective designation	Ocular lens magnification	Objective lens magnification	Total magnification
Scanning	10	4	-
Low power	-	10	-
-	10	40	-
Oil immersion	-	-	1000

- (c) Explain the difference between autotrophic and heterotrophic bacteria. (5 marks)
- d) Write an essay on temperature requirements of bacteria (11 marks)

[TOTAL MARKS=25]

Question 6

- a) Explain the term "a virus". (4 marks)

- b) Why viruses are called obligate intracellular parasites? (2 marks)
- c) With specific examples, name and draw the morphological classes of viruses. (8 marks)
- d) Compare/contrast the mode of action of death angel mushroom (*Amanita* spp) with that of *Aspergillus* spp. (3 marks)
- e) Tabulate the most notorious human diseases caused by microorganisms and then use your comprehensive knowledge of mycology to explain the relevance of fungi to humans. (8 marks)

[TOTAL MARKS=25]

END OF EXAMINATION PAPER