UNIVERSITY OF ESWATINI

FACULTY OF SCIENCE AND ENGINEERING

DEPARTMENT OF BIOLOGICAL SCIENCES

RE-SIT EXAMINATION PAPER 2019/2020

PROGRAMMES: B.Sc. I

B. Ed Secondary I

B. Ed Primary I

TITLE OF PAPER: INTRODUCTORY BOTANY

COURSE CODE: BIO101

TIME ALLOWED: THREE HOURS

INSTRUCTIONS:

1. THIS PAPER IS DIVIDED INTO TWO SECTIONS

2. ANSWER TWO QUESTIONS FROM EACH SECTION IN TWO SEPARATE BOOKLETS

3. ANSWER ALL QUESTIONS FROM SECTION A

4. ANSWER ANY TWO QUESTIONS FROM SECTION B

5. EACH QUESTION CARRIES TWENTY FIVE (25) MARKS

6. ILLUSTRATE YOUR ANSWERS WITH LARGE AND CLEARLY LABELLED DIAGRAMS WHERE APPROPRIATE.

SPECIAL REQUIREMENTS:

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

Section A: Answer all questions in this section.

Question 1

a) State three differences between DNA and RNA. (3 marks)

b) What are anomers and how are they formed? (3 marks)

c) Does fructose give the same result as glucose when reacted with Benedict's reagent? Explain your answer (4 marks)

d) Explain roles of any two plant cell organelles (4 marks)

e) List the different types of non-covalent interactions in the lipid bilayer (4 marks)

f) List the common features of the models of membrane transport systems (4 marks)

g) Draw the general structure of phospholipid. (3 marks)

[TOTAL MARKS= 25]

Question 2

a) Write short notes on the following;
    (i) degree of fatty acid saturation (5 marks)
    (ii) fats and oils (5 marks)
    (iii) active transport (5 marks)
    (iv) primary structure of proteins (5 marks)
    (v) light independent reactions in photosynthesis (5 marks)

[TOTAL MARKS= 25]

SECTION B: Answer any Two (2) questions from this section

Question 3

a) Draw a diagram of a bacterium. (6 marks)

b) State the function(s) of the following: (8 marks)
    i. glycocalyx
    ii. pilus
    iii. cell wall
    iv. flagellum
    v. 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 4

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 (11marks)

[TOTAL MARKS=25]

Question 5

a) Explain the term "a virus". (5 marks)

b) Why are viruses called obligate intracellular parasites? (1 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