UNIVERSITY OF FORT HARE

BOT 121

SUPPLEMENTARY EXAMINATIONS

JANUARY 2019

TIME: 3HOURS MARKS: 100

SUBJECT: BOTANY 121

PAPER: INTRODUCTION TO ECOLOGY, PHYSIOLOGY AND PLANT DIVERSITY

This paper consists of THREE pages including the cover page

EXAMINERS: Prof A Maroyi
Dr B Mayekiso
Ms Z Mhinana

ANSWER ALL QUESTIONS FROM EACH SECTION

Illustrate your answers, wherever possible with carefully labelled drawings or diagrams

SECTION A

Question 1

a) Use both, a written answer and illustrations to explain the differences between Exponential Population Growth and Logistic Population Growth (6)

b) Discuss assumptions of the Exponential Growth Model (6)

c) Discuss applications of the Exponential Growth Model (5)

d) Use both, a written answer and an illustration to explain why some populations show radical changes (fluctuations) in size over time (3)

[20]

Question 2

a) Explain, by means of appropriate examples, what commensalism is (7)

b) Explain, by means of appropriate examples, what mutualism is (8)

[15]

SECTION B

Question 3

A. Define/explain the following terms

i) Water potential (2)

ii) Osmosis (2)

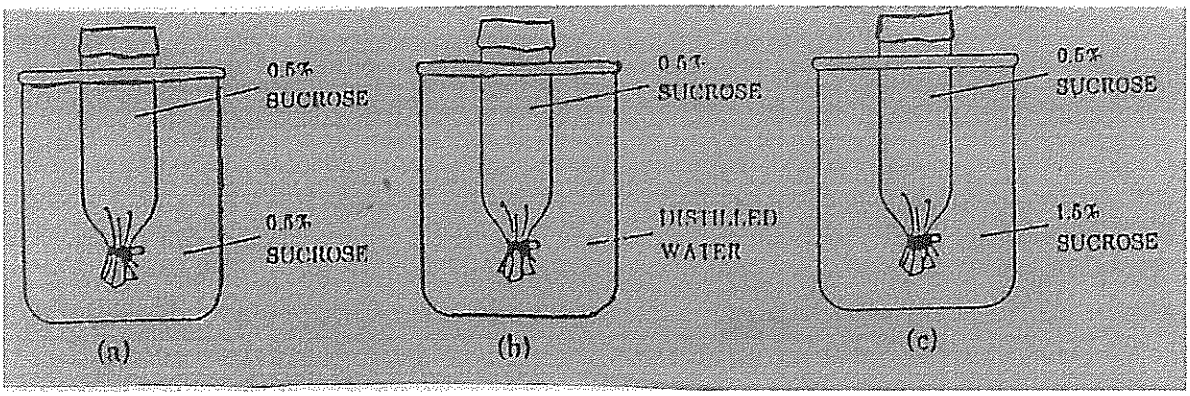
iii) Hypertonic solution (2)

iv) Igneous rock and Metamorphic rock (2)

v) Metamorphic rock (2)

(10)

B. Dialysis bags containing a 0.5% sucrose solution are placed in beakers containing the Sucrose solution at different concentration and water as indicated below.



Indicate the letter of the beaker in which the following events occur:

i. The dialysis bag swells
ii. Water move from the dialysis bag into the beaker
iii. Water potential inside the bag is higher than water potential outside the bag
iv. The osmotic potential inside the bag is higher than that of the outside of the bag
v. The dialysis bag remains the same size. **(5)**

C. Discuss the factors affecting the rate of transpiration **(10)**

D. Discuss the mechanisms of the stomatal opening and closure **(10)**

[35]

SECTION C

Question 4

a) Define the following terms:
   i) Gametophyte
   ii) Antheridia
   iii) Alternation of generation
   iv) Archegonia
   v) Sporangium (5)

b) Draw the life cycle of a *Pinus* (15)

c) Name four divisions of gymnosperms and give example of each (8)

d) Distinguish between monocots and dicots (2)

[30]

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