



**BIT2601
SECOND PAPER**

May/June 2017

BIOTECHNOLOGY

Duration 2 Hours

100 Marks

EXAMINERS

FIRST

MS AAC HARRIS

SECOND

PROF SL LEBELO

Programmable pocket calculator is permissible

Closed book examination

This examination question paper remains the property of the University of South Africa and may not be removed from the examination venue

This paper consists of two (2) pages

You have two (2) hours to answer all the questions

Students must answer the questions in the examination answer book provided

[TURN OVER]

QUESTION 1**[20]**

1 1 Define the following terms

- 1 1 1 Aerobic metabolism
- 1 1 2 Plasmid DNA vector
- 1 1 3 Reduction reaction
- 1 1 4 Bio augmentation
- 1 1 5 Microbial biotechnology
- 1 1 6 Restriction enzymes
- 1 1 7 Ligase
- 1 1 8 Recombinant DNA technology
- 1 1 9 Genetic engineering
- 1 1 10 cDNA

(2 x 10 = 20)

QUESTION 2**[15]**

Discuss the process of the polymerase chain reaction (PCR) and the components required (15)

QUESTION 3**[30]**

3.1. Discuss bioremediation and phytoremediation

(20)

3 2 Discuss the application of biotechnology in the following fields

(6)

3 2 1 Agriculture and food

3 2 2 Medicine

3 2 3 Environment

3 3 List four (4) arguments against the use of genetically modified food technology

(4)

QUESTION 3**[20]**

3 1 Describe the leaf fragment technique, gene guns and chloroplast engineering used in plant transgenesis

(10)

3 2 Describe reporter gene and their use in biotechnology

(5)

3 3 Briefly describe the principle of agarose gel electrophoresis

(5)

[TURN OVER]

QUESTION 4

[15]

List and describe methods in protein purification

(15)

TOTAL: 100 MARKS