



**NAMIBIA UNIVERSITY  
OF SCIENCE AND TECHNOLOGY  
FACULTY OF HEALTH AND APPLIED SCIENCES  
DEPARTMENT OF NATURAL AND APPLIED SCIENCES**

<b>QUALIFICATION : BACHELOR OF SCIENCE</b>	
<b>QUALIFICATION CODE: 07BOSC</b>	<b>LEVEL: 7</b>
<b>COURSE CODE: BIO702S</b>	<b>COURSE NAME: BIOTECHNOLOGY</b>
<b>SESSION: JANUARY 2019</b>	<b>PAPER: THEORY</b>
<b>DURATION: 3 HOURS</b>	<b>MARKS: 120</b>

<b>SECOND OPPORTUNITY / SUPPLEMENTARY EXAMINATION QUESTION PAPER</b>	
<b>EXAMINER(S)</b>	<b>Prof Percy Chimwamurombe</b>
<b>MODERATOR:</b>	<b>Dr Jean-Damascene Uzabakiriho</b>

<b>INSTRUCTIONS</b>
<ol style="list-style-type: none"><li>1. Answer <b>ALL</b> the questions.</li><li>2. Write clearly and neatly.</li><li>3. Number the answers clearly.</li></ol>

**PERMISSIBLE MATERIALS**

Non-programmable Calculators

**ATTACHMENT**

None

**THIS QUESTION PAPER CONSISTS OF 3 PAGES (Including this front page)**

1. Carefully describe the procedure of DNA isolation from plant leaves (10)
2. Describe the Southern blotting procedure. (5)
3. Explain the use of a microprojectile particle bombardment gun. (5)
4. Describe DNA agarose gel electrophoresis. (5)
5. Describe the process of DNA polymerase chain amplification. (10)
6. Describe the types of restriction endonucleases. (5)
7. Describe and give examples of any three DNA modifying enzymes. (5)
8. Imagine that you are the local biotechnologist and are required to innovate on the development of a transgenic banana with edible vaccines. Explain how you can do it? (5)
9. Describe a typical plasmid cloning vector. (5)
10. What are advantages and disadvantages of any three cloning hosts. (5)
11. Describe some of applications of Biotechnology, give three examples in each case. (5)
12. Describe any five –“Omic” techniques which you know. (5)
13. Explain the procedure of making a GM plant of your choice. (10)

1. Carefully explain the procedure of somatic embryogenesis and its application  
in producing genetically modified plants. (20)
  
2. Most of the concerns given by the public regarding transgenic plants and the  
environment are not safety issues *per se*. Write an essay clearly highlighting  
only three safety concerns and giving possible solutions to these concerns regarding  
transgenic plants. (20)

-----END OF EXAMINATION QUESTIONS-----