



**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 NAME: BIOTECHNOLOGY</b>	<b>COURSE CODE: BIO702S</b>
<b>SESSION: NOVEMBER 2019</b>	<b>PAPER: THEORY</b>
<b>DURATION: 3 HOURS</b>	<b>MARKS: 120</b>

<b>FIRST OPPORTUNITY 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)**

**SECTION A****[80 MARKS]**

1. Carefully describe a procedure of DNA isolation from plant leaves (5)
2. Describe the Southern blotting procedure. (10)
3. Explain the use of a particle bombardment apparatus. (5)
4. Describe the process of 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. Assume 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. State the 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 transgenic plant of your choice. (10)

1. Describe the procedure of somatic embryogenesis and its application in producing genetically modified plants. (20)
2. The majority 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-----