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OF SCIENCE AND TECHNOLOGY

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QUALIFICATION : **BACHELOR OF SCIENCE**	
QUALIFICATION CODE: **07BOSC**	LEVEL: **7**
COURSE: **BIOTECHNOLOGY**	COURSE CODE: **BIO702S**
DATE: **NOVEMBER 2024**	SESSION: **1**
DURATION: **3 HOURS**	MARKS: **120**

FIRST OPPORTUNITY: QUESTION PAPER

EXAMINER: *Prof Percy Chimwamurombe*

MODERATOR: *Dr Jean Damascene Uzabakiriho*

INSTRUCTIONS

1. Answer all questions on the separate answer sheet.
2. Please write neatly and legibly.
3. Do not use the left side margin of the exam paper. This must be allowed for the examiner.
4. No books, notes and other additional aids are allowed.
5. Mark all answers clearly with their respective question numbers.

PERMISSIBLE MATERIALS:

1. Non-Programmable Calculator

ATTACHEMENTS

1. NONE

This paper consists of 3 pages including this front pages.

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. How do 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)

SECTION B [40 MARKS]

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 QUESTION PAPER------