

**NATIONAL OPEN UNIVERSITY OF NIGERIA**

**14/16 AHMADU BELLO WAY, VICTORIA ISLAND, LAGOS**

**SCHOOL OF SCIENCE AND TECHNOLOGY**

**JUNE/JULY EXAMINATION**

**COURSE CODE: CSP401**

**COURSE TITLE: BIOTECHNOLOGY IN CROP/PEST MANAGEMENT**

**TIME ALLOWED: 2 HOURS**

**INSTRUCTION: ANSWER QUESTION 1 AND ANY OTHER FOUR QUESTIONS**

1. I need to rapidly multiply an exotic banana cultivar for planting and ensure that the resulting plant is identical to the stock plant material. Discuss the general steps/stages that I should follow.        20 marks

 2 (a). What is biotechnology?       5marks

   (b). Define the following terms:

i) A Construct        5 marks

ii) Cloning        5 marks

iii) Restriction enzymes      5 marks

iv) Transformation       5 marks

v) Totipotency        5 marks

3 (a). Discuss the causes of mutation in two categories.   17 marks

   (b). What is recombinant DNA?        3 marks

4 (a). What are transgenic plants?         3 marks

   (b). Why are transgenic crops needed?        8 marks

   (c). Discuss the three major genetic traits that are used in breeding for resistance to fungal diseases in crops?         9 marks

5. Discuss the GM control of insect pests.       20 marks

6 (a). List six ways through which herbicide resistance can be prevented or delayed.

0.5 x 6 points = 3 marks

   (b). Discuss five advantages of herbicide resistant cultivars.  12 marks

   (c). What is nitrogen fixation and why is the process essential for life?   3 marks

   (d). What is denitrification?         2 marks

7 (a). Discuss the following genetic marker technologies:

    (i). Restriction fragment length polymorphism;   5 marks

    (ii). Amplified fragment length polymorphism and   5 marks

    (iii). Random Amplification of Polymorphic DNA.   3 marks

   (b). What are the applications and limitations of the above technologies? 7 marks