



FIJI NATIONAL UNIVERSITY
College of Agriculture, Fisheries & Forestry
School of Agriculture & Forestry
Department of Crop Science
Bachelor of Education – Year 3
Final Examination
Trimester 3 - 2019
ABT 701- Agricultural Biotechnology

Writing Time: 3:00 hours
Reading Time: extra 10 minutes allowed at the beginning of the exam
Total Marks: 100

INSTRUCTIONS:

1. This paper consists of three pages.
2. Please check to see that all your paper is complete.
3. Answer all questions in the answer booklet only.
4. No written or printed material and mobile phones are allowed in the examination hall.
5. Marks allocated for each section appears at the side of each question so allocate your time accordingly.
6. This paper is divided into three sections.

Section A: Objective questions	(10 Marks)
Section B: Short answer	(40 Marks)
Section C: Essay	(60 Marks)

Section A: Objective type questions**(10 Marks)****Section A1: Match the following:****(10 x 0.5 = 5 Marks)****PART – A****PART-B**

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|----------------------------------|--|
| 1. Biotechnology | A. Rapid asexual proliferation |
| 2. Plant Tissue Culture | B. Used in DNA transfer |
| 3. Vitamin A | C. Insecticidal crystal proteins |
| 4. Dolly | D. Effective for fruit ripening |
| 5. Plasmid | E. Vaccines produced by plants |
| 6. rBST | F. Exact genetic copy |
| 7. <i>Bacillus thuringiensis</i> | G. Produced through recombinant DNA technology |
| 8. Clone | H. Aleurone layer of rice |
| 9. Ethylene | I. First cloned animal |
| 10. Edible vaccines | J. Manipulation of living organisms |

Section A2. True or False:**(10 x 0.5 = 5 Marks)**

11.	Shoot regeneration is promoted by gibberellins	
12.	Green biotechnology represents marine and aquatic application	
13.	Morphogenesis is the ability of a single cell to divide and produce whole plant.	
14.	Plasmids naturally exist in bacterial cells.	
15.	Clones are organisms that are exact genetic copies.	
16.	Annealing occurs at 72°C	
17.	Cassava contains toxic cyanogenic glycosides.	
18.	Biotechnology is used to produce golden rice	
19.	Germ cells include cells in the liver.	
20.	Biosafety (Biopolicy) is the safety in use of genetically modified organisms	

Section B: Short answer**(40 Marks)****Section B 1: Attempt any FIVE questions (5 x 3 = 15 Marks)****Apply the knowledge and generate answers for the following with diagrams:**

21. *Agrobacterium tumefaciens* a natural genetic engineer
22. rDNA technology or Genetic engineering with diagram.
23. Notes on the use of viruses as a vector.
24. Morphogenesis and its types.
25. Importance of using thermostable enzymes (Taq).

26. Biosafety and bio-policy in biotechnology.

Section B 2: Attempt any FIVE questions (5 x 5 = 25 Marks)

27. Briefly explain the history and importance of biotechnology.
28. Explain the mechanism by which Bt genes confer resistance in plants.
29. Plants are made up of many types of tissues. Explain these in detail.
30. DNA replication is considered to be semi-conservative in nature. Explain why this is considered to be the case.
31. Explain the process of SCNT.
32. Explain the role of abscisic acid and ethylene in plant growth.

Section C: Essay

(50 Marks)

Demonstrate with diagram and generate information on the following

Attempt any 4 questions (4 x 12.5 = 50 Marks)

33. Justify, with examples, the role of biotechnology in the development of agriculture.
34. Elaborate on the myriad of social issues affecting biotechnology while also analysing and discussing the advantages and disadvantages of ethics in biotechnology
35. Mechanism and process of carrying out plant tissue culture. Elaborate on its advantages and disadvantages.
36. Articulate animal cloning or reproductive cloning with the provision of suitable examples.
37. Polymerase Chain Reaction is an important part of biotechnology. Explain the process of PCR and its role in modern agriculture.

THE END

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