



FIJI NATIONAL UNIVERSITY
College of Agriculture, Fisheries & Forestry
School of Agricultural Sciences & Forestry
Department of Crop Production
Bachelor of Science in Agriculture– Year 3
Final Examination
Trimester 2 - 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 Section

Section A: Objective questions (10 Marks)
Section B: Short answer (40 Marks)
Section C: Essay (50 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. Molecular marker | A. Short DNA sequence |
| 2. Restriction enzyme | B. Cut the specific sites of DNA |
| 3. Callus | C. Gaseous Plant Growth Hormone |
| 4. Dolly | D. Hormone produced by cows |
| 5. Plasmid | E. Tool to locate plant genes |
| 6. Primer | F. Use of traditional knowledge & technology |
| 7. <i>Bacillus thuringiensis</i> | G. Collenchyma cells |
| 8. Somatotropin | H. Increase the height of plants |
| 9. Ethylene | I. Insecticidal crystal proteins |
| 10. Reductionistic ideology | J. Parenchyma cells |
| | K. First cloned animal |
| | L. Use of new knowledge & modern technology |
| | M. Fertility factor |

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

- Shoot regeneration is promoted by cytokine.
- White biotechnology represents marine and aquatic application.
- Plasticity is the ability of a single cell to divide and produce whole plant.
- Plasmids are artificial and are naturally exist in bacterial cells.
- Clones are organisms that are exact genetic copies.
- PCR is a method for DNA recombination.
- Cassava contains toxic cyanogenic glycosides.
- Rice is a staple food for half of the world's population.
- A somatic cell is any cell in the body other than sperm and egg.
- 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 virus as a vector.
24. Morphogenesis and its types.
25. Restriction enzymes & DNA ligase
26. Biosafety and bio-policy in biotechnology.

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

27. Role of rBST gene to improve milk production.
28. The role of *Bacillus (Bt)* genes in production of resistant varieties.
29. Types of plant tissues.
30. Semiconservative mode of DNA replication.
31. Biotechnology in making golden rice.
32. Ethical issues of GM products.

Section C: Essay**(50 Marks)****Demonstrate with diagram and generate information on the following****Attempt any FOUR questions****(4 x 12.5 = 50 Marks)**

33. Mechanism of Polymerase Chain Reaction, and its role in biotechnology.
34. Steps in doing Plant Cloning. Its advantages and disadvantages.
35. Social issues of biotechnology. Advantages and Disadvantages of Ethics in Biotechnology.
36. Animal Cloning or reproductive cloning. Explain with examples.
37. Role of biotechnology in the development of agriculture. Justify with examples.

THE END**XXXXXXXXXXXX**