Student I D No..... Date: .....

FIJI NATIONAL UNIVERSITY

College of Agriculture, Fisheries & Forestry
Department of Crop Production
Bachelor of Agriculture- Year III
Trimester II- Final Examination - 2017
ABT701: Agricultural Biotechnology

Time Allowed: 3.00 hours plus (10 minutes reading time) Total Marks: 50

INSTRUCTIONS:

1. This paper consists of six pages including two pages Answer Sheet.
2. Please check to see that all your paper is complete.
3. Answer all the Objective Type Questions on the Answer Sheet and Descriptive Type Question 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 question appears at the side of each question so allocate your time accordingly.
6. This paper is divided into Two Parts. First Part contains Objective Type Questions which is having four Sections – A, B, C, and D. All questions of this part are compulsory. Second part is Descriptive Type which is having eight (8) questions. Attempt only any six questions from this part.

I. OBJECTIVE TYPE QUESTIONS (20 Marks)

To be answered only on the Answer Sheet.

Section A: Fill in the blanks.	(5 Marks)
Section B: Multiple choice Questions.	(5 Marks)
Section C: Match the following	(5 Marks)
Section D: Write True or False.	(5 Marks)

II. DESCRIPTIVE TYPE QUESTIONS (30 marks)

There are **eight (8)** descriptive type questions provided, please **attempt any Six (6) questions only** and write on the Answer Booklet. Answer every question from a new page to facilitate evaluation.

EACH QUESTION CARRIES FIVE MARKS ***6 x 5 = 30 Marks***

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I. OBJECTIVE TYPE QUESTIONS

Note: To be answered only on the ANSWER SHEET provided with QUESTION PAPER.

A. FILL IN THE BLANKS. *(10 x 0.5=5 Marks)*

1. _____ is the classic example of bacteriophage vector.
2. _____is a natural genetic engineer.
3. Restriction enzyme is excising the DNA in _____sites.
4. _____ is the tissue culture method for germplasm conservation.
5. _____is the first genetically engineered crop.
6. _____ is the widely used medium in tissue culture experiments.
7. _____is the common vector used in gene cloning experiment.
8. Cosmid vectors can be used for cloning of DNA molecules up to_____.
9. _____ is adirect gene transfer method to develop transgenic plant.
10. The enzyme used in PCR reaction is _____.

B. CHOOSE THE BEST ANSWER. *(10 x 0.5=5 Marks)*

11. The term Biotechnology was coined by
    - *a* Haberlandt
    - *b* Fredrick Sanger
    - *c* Karl Ereky
    - *d* Lippman

12 Phages only infect
    - *a* Bacteria
    - *b* Virus
    - *c* Both A&B
    - *d* None of the above

13. The scientist who discovered the technique anther culture
    - *a* Cocking.E.C
    - *b* Murashige and Skoog
    - *c* Miller
    - *d* Guha and Maheswari

14. The direct gene transfer method is
    - *a* Particle bombardment
    - *b* Somoclonal variation
    - *c* Agrobacterium mediated transformation
    - *d* Meristem tip culture

15. The suitable buffer to extract DNA
    - *a* TE buffer
    - *b* SDS buffer
    - *c* CTAB buffer
    - *d* Potassium Acetate buffer

16. Taq Polymerase enzyme is
    - *a* Thermo stable
    - *b* Thermo liable
    - *c* Thermo unstable
    - *d* None of the above

17. An example for Type II restriction enzyme
    - *a* *Eco RI*
    - *b* *Eco K*
    - *c* *Eco PI*
    - *d* *Not I*

18. The sub culturing in tissue culture is
    - *a* Stage 0
    - *b* Stage 1
    - *c* Stage 2
    - *d* Stage 3

19. The oxidation of phenolic compounds leached out from the cut surface of the explant in tissue culture leads to
    - *a* Browning of medium
    - *b* Blackening of medium
    - *c* Colorless medium
    - *d* None of the above

20. The enzyme taking part in joining two nucleotides in PCR reaction
    - *a* Ligase
    - *b* Polymerase
    - *c* Gyrase
    - *d* Helicase

C. MATCH THE FOLLOWING: *(10 x 0.5=5 Marks)*

PART – A		PART-B	
21.	Haploid plants	A.	Pollen culture
22.	Ploymerase Chain Reaction	B.	Somatic hybrid
23.	Ri Plasmid	C.	Murashige and Skoog
24.	Browning of medium	D.	Restriction enzymes
25.	Cauliflower mosaic virus	E.	Cross ability barriers
26.	Embryo Rescue	F.	Plant part for tissue culture
27.	Pomato	G.	Agrobacterium
28.	Explant	H.	Bacteriophage vector
29.	MS medium	I.	Charcoal
30.	Arther	J.	Amplification of DNA

D. WRITE TRUE OR FALSE: *(10 x 0.5=5 Marks)*

31. Plasmids are circular, double-stranded DNA molecules
32. Cloning vectors should not have Origin of replication (*Ori* genes)
33. Acetosyringone is a phenolic compound is necessary to Virulence gene activation.
34. Biotechnology provides a way to produce large quantities of a particular gene product such as human growth hormone
35. Somatic embryos are encapsulated in calcium alginate beads for synthetic seeds.
36. Ligases recognize and join specific DNA sequences about four to eight base pairs long.
37. Higher molecular weight DNA fragments travel more quickly through agarose gel in electrophoresis
38. *Bacillus thuriengenesis* is a soil bacterium
39. The enzymes to obtain cell wall free protoplasts are cellulose and proteinase.
40. The plants derived from pollen culture will be in diploid state

II. DESCRIPTIVE TYPE QUESTIONS

E. DESCRIBE THE FOLLOWING - **Attempt Any SIX Questions.**

Each question carries FIVE marks *(6 x 5 = 30 Marks)*

41. Describe the steps involved in gene cloning experiments with suitable illustrations and examples
42. Describe the steps involved in the process of meristem tip culture
43. Describe the important milestones of biotechnology, give emphasis for Agricultural Biotechnology
44. Describe the different classifications and properties of cloning vectors
45. List the application of tissue culture in crop improvement
46. Explain Agrobacterium mediated gene transfer method with its advantages and limitations
47. Explain in detail direct gene transfer methods with its advantages and limitations
48. Explain in detail about Polymerase Chain Reaction and its application in various fields

The End

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B. Sc. Agriculture Year III, Trimester-II, Final Examination-2017
Unit Code/Title: ABT 701 – Agricultural Biotechnology
I. Objective Type Questions - Answer Sheet

Total Marks: 20

A.	1.		
	2.		
	3.		
	4.		
	5.		
	6.		
	7.		
	8.		
	9.		
	10.		

B.	11.		
	12.		
	13.		
	14.		
	15		
	16.		
	17.		
	18.		
	19.		
	20.		

C.	21.		
	22.		
	23.		
	24.		
	25		
	26.		

	27.		
	28.		
	29.		
	30.		

D	31.		
	32.		
	33.		
	34.		
	35		
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	38.		
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	40.		

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