

The Open University of Sri Lanka
Faculty of Engineering Technology
Department of Agricultural and Plantation Engineering



Study Programme : Bachelor of Industrial Studies Honours (Agriculture)
Name of the Examination : Final Examination
Course Code and Title : AGI6585 Applications in Biotechnology
Academic Year : 2024/2025
Date : 20th February 2026
Time : 14:00 -17:00 hr
Duration : 03 Hours

Index No. :

Examination Type: Closed Book Test

General Instructions

1. Read all instructions carefully before answering the questions.
2. Answers should be in clear handwriting.
3. Do not use red colour pen.
4. This question paper consists of two (02) sections.

Section 1

- Consists of 15 questions in five (05) pages.
- Answer all questions.
- All questions carry equal marks.
- Write answers only in the space provided.
- Please do not remove the question paper from the examination hall.
- You may spend one (01) hour to answer this section.

Section 11

- Contain six (06) questions.
- Answer any four (04) questions.
- You may spend two (02) hours to answer this section.
- All questions carry equal marks.
- Answer for each question should commence from a new page.

SECTION I: Answer all questions. Use the space given under each question.

1. Name two (02) primary metabolites.

i

ii

2. List four (04) advantages of Solid-State Fermentation (SSF) of agricultural and food processing waste into value-added products.

i

ii

iii

iv

3. Name one (01) fungal and one (01) bacterial biopesticide used in Agriculture

i Bacterial biopesticide -

ii Fungal Biopesticide -

4. Explain why biopesticides are considered environmentally friendly.

5. Explain the effect of substrate solids content and agitation on biogas production process

6. Explain the importance of carrier materials in biofertilizer formulations.

7. Briefly explain the effects of aeration on composting process.

8. List five (05) factors affecting the Somaclonal variation in plants at molecular level.

i

ii

iii

iv

v

9. Define embryo rescue.

10. Explain how *in vitro* pollination helps overcome pre-fertilization barriers.

11. Name two (02) utilizations of hybrids raised through embryo culture

i

ii

12. What is meant by a protoplast?

13. Explain the reason for selecting liquid culture as the preferred media for protoplast cultivation.

14. Name five (05) areas that scientists focus on improving the animal biotechnology.

i

ii

iii

iv

v

15. Write two (02) objectives of implementing the National Biosafety Framework in Sri Lanka

i

ii

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SECTION 2: Answer any four (04) questions.

1. Write an essay on use of microbial enzymes for the improvement of food industry (25 marks).
2. Compare chemical fertilizers and biofertilizers in terms of environmental impact and sustainability (25 marks).
3. Write an essay on utilizing plant genetic resources for crop improvements (25 marks)
4. 'Single cell culture technique is very important for the fundamental and mutation studies, and it has a wide industrial application' Discuss the statement (25 marks)
5. Discuss factors affecting haploid plant production (25 marks)
6. Explain the relationship between biodiversity and biotechnology (25 marks).