

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



Study Programme	: Bachelor of Science Honours in Engineering (Agricultural Engineering) Programme
Name of the Examination	: Final Examination
Course Code and Title	: AGX4405 Post Harvest Engineering and Technology I
Academic Year	: 2024/25
Date	: 1 st March 2026
Time	: 9 30-12 30h
Duration	: 3 hours

Index number

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 six (06) 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 in **two (02)** pages.
 - 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.
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SECTION 1

1. Give **five (5)** types of damages can occur to fresh produce after harvest.

- i.
- ii.
- iii.
- iv.
- v.

2. A batch of 3 tons of paddy with a moisture content of 25% (wet basis) needs to be dried to a final moisture content of 12% (dry basis). Calculate the weight of the dried product and the amount of water removed during drying

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3. List **five (5)** advantages of mechanical drying over solar drying.

- i.....
- ii.....
- iii.....
- iv.....
- v.....

4. What is meant by “Drying efficiency”?

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5. List **five (5)** problems may occur in Grain storage.

- i.
- ii.
- iii.
- iv.
- v.

6. Mention **two (2)** strategies to manage/control fungi and rodents in grain storage.

Fungi:

- i.
- ii.

Rodents:

- i.
- ii.

7. List **three (3)** types of grain storage methods.

- i.
- ii.
- iii.

8. Why does parboiled rice have a higher nutritional value compared to raw rice?

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9. What are the key steps involved in rice milling?

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10. Give **five (5)** Common quality problems in rice milling.

- i.
- ii.
- iii.
- iv.
- v.

11. What are the major steps in preparation of raw materials?

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12. What are the **five (5)** P's of GMP (Good Manufacturing Practices)?

- i.
- ii.
- iii.
- iv.
- v.

13. List **five (5)** benefits of International Organization for Standardization (ISO) standards in food industry?

- i.
- ii.
- iii.

iv.

v.

14. What is meant by **HACCP**?

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15. Give **five (5)** components of Supply chain Management?

i.

ii.

iii.

iv.

v.

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SECTION 2: Answer any four (04) questions.

1. a) What is meant by Equilibrium Moisture Content?
(5 mark)
- b) Explain Hysteresis effect of a moist object.
(5 marks)
- c) How does grain moisture content affect the quality and shelf life of stored grains? Briefly explain.
(15 marks)

2. a) Explain why is grain drying essential in post-harvest management?
(10 mark)
- b) Explain the drying techniques used in solar drying and mechanical drying equipment.
(15 marks)

3. How do the "Building Attributes" affect designing of structure of warehouse and functionality?
(25 marks)

4. a) What factors influence the yield and quality of rice during the paddy processing stages? Briefly explain.

(10 marks)

- b) Explain the difference between raw rice and parboiled rice in terms of processing and nutritional value.

(10 marks)

5. a) Explain why is food safety management important in the food industry?

(10 marks)

- b) Explain the 10 principles of GMP.

(15 marks)

6. Write short notes on following **three (3)** topics.

(25 marks)

- i) Importance of fumigants in grain storage
- ii) Climacteric & non-climacteric fruit
- iii) Modified Atmospheric Packaging (MAP).
- iv) Controlled Atmosphere (CA)
- v) Equilibrium Moisture Content