

# Faculty of Agriculture

## End Semester Examination May 2025

### AG3CO44 Protected Cultivation & Secondary Agriculture

<b>Programme</b>	:	B. Sc. (Hons.)	<b>Branch/Specialisation</b>	:	AG
<b>Duration</b>	:	3 hours	<b>Maximum Marks</b>	:	50

**Note:** All questions are compulsory. Internal choices, if any, are indicated. Assume suitable data if necessary.  
Notations and symbols have their usual meaning.

#### Section 1 (Answer all question(s))

**Marks CO BL**  
1    1    1

**Q1.** Which factor would have the least effect on plant growth inside a greenhouse?

<b>Rubric</b>	<b>Marks</b>
Soil texture	1

- Temperature       Humidity  
 Air circulation       Soil texture

**Q2.** Which material would be best for constructing a greenhouse in a high-humidity environment?

1    1    1

<b>Rubric</b>	<b>Marks</b>
Polycarbonate panels	1

- Concrete       Galvanized steel  
 Polycarbonate panels       Fiber glass

**Q3.** Which type of greenhouse design is most suited for cold climates?

1    2    1

<b>Rubric</b>	<b>Marks</b>
Quonset Greenhouse	1

- Quonset Greenhouse       Gothic Arch Greenhouse  
 Even Span Greenhouse       Lean-to Greenhouse

**Q4.** What type of equipment is used to control the humidity inside a greenhouse?

1    2    1

<b>Rubric</b>	<b>Marks</b>
Dehumidifiers	1

- Dehumidifiers       Solar panels  
 Shade cloth       Grow lights

**Q5.** Which of the following materials is most commonly used in the construction of a greenhouse heating system?

1    3    2

<b>Rubric</b>	<b>Marks</b>
Polycarbonate	1

- Aluminum       Copper  
 Polycarbonate       Iron

**Q6.** Which of the following is NOT an engineering property of cereals?

1 3 2

Rubric	Marks
Chemical property	1

- Thermal property       Chemical property  
 Physical property       Aerodynamic property

**Q7.** Which physical property affects the handling and storage of grains?

1 4 2

Rubric	Marks
Moisture content	1

- Thermal conductivity       Moisture content  
 Specific heat       Vapour pressure

**Q8.** Which factor significantly affects the drying rate of grains?

1 4 2

Rubric	Marks
Air temperature and humidity	1

- Bulk density       Angle of repose  
 Air temperature and humidity       Color of the grain

**Q9.** Conveyors are mainly used for-

1 5 2

Rubric	Marks
Transporting grains from one place to another	1

- Measuring moisture content in grains       Transporting grains from one place to another  
 Increasing grain storage capacity       Reducing grain size

**Q10.** Which of the following is an example of a thermal property of grains?

1 5 2

Rubric	Marks
Specific heat	1

- Bulk density       Porosity  
 Specific heat       Angle of repose

## Section 2 (Answer all question(s))

Marks CO BL

**Q11.** Give the role of insulation in maintaining the temperature inside a greenhouse.

2 1 2

Rubric	Marks
Role of insulation	1
maintaining the temperature inside a greenhouse?	1

**Q12.** Enlist the basic design criteria for greenhouse cooling system.

2 1 2

Rubric	Marks
enlist the basic design criteria for a greenhouse cooling system	2

**Q13. (a)** Evaluate how different greenhouse materials affect the performance of heating and cooling systems. Justify using a specific climate.

4 1 2

Rubric	Marks
how different greenhouse materials affect the performance of heating and cooling systems	2
justify using a specific climate	2

(OR)

**(b)** How does plant response to greenhouse environment? Enlist the factors influencing greenhouse environment.

Rubric	Marks
plant response to greenhouse environment	2
the factors influencing greenhouse environment.	2

### Section 3 (Answer all question(s))

**Q14.** Why it is important to have proper ventilation in a greenhouse for temperature control?

Marks CO BL  
1 2 2

Rubric	Marks
Explain why it is important to have proper ventilation	0.5
greenhouse for temperature control?	0.5

**Q15.** Give the factors influencing the choice of materials for the construction of a low-cost greenhouse.

3 2 2

Rubric	Marks
Analyze the factors influencing the choice of materials	1.5
materials for the construction of a low-cost greenhouse?	1.5

**Q16. (a)** Evaluate the challenges and benefits of designing a low-cost greenhouse for small-scale farmers. What materials and design features would you prioritize?

4 2 2

Rubric	Marks
the challenges and benefits of designing a low-cost greenhouse for small-scale farmers	2
materials and design features would you prioritize	2

(OR)

**(b)** Enlist and explain the role of green house equipment's.

Rubric	Marks
Enlist green house equipment's.	2
explain the role of green house equipment's	2

### Section 4 (Answer any 2 question(s))

**Q17.** Enlist and describe different types of irrigation systems used in greenhouses.

Marks CO BL  
4 3 3

Rubric	Marks
Enlist different types of irrigation systems	2
Irrigation systems used in greenhouses?	2

**Q18.** Explain the working principle of a passive solar greenhouse and its benefits.

4 3 2

Rubric	Marks
Explain the working principle of a passive solar greenhouse	2
passive solar greenhouse and its benefits?	2

**Q19.** Explain hot air greenhouse heating systems.

4 3 2

Rubric	Marks
hot air greenhouse heating systems	4

### Section 5 (Answer all question(s))

**Q20.** Assess the advantages and limitations of greenhouse.

Marks CO BL

1 4 2

Rubric	Marks
Assess the advantages	0.5
limitations of greenhouse ?	0.5

**Q21.** Define the term "economic analysis" in the context of post-harvest technology.

3 4 2

Rubric	Marks
Define the term economic analysis	1.5
Economic analysis in the context of post-harvest technology?	1.5

**Q22. (a)** Explain cost estimation. How would you estimate the cost of setting up a small-scale oilseed processing unit?

4 4 3

Rubric	Marks
cost estimation also how would you estimate the cost of setting up a small-scale oilseed processing unit	4

(OR)

**(b)** Enlist engineering properties of grains and give their role in equipment design.

Rubric	Marks
engineering properties of grains	2
their role in equipment design	2

### Section 6 (Answer any 2 question(s))

**Q23.** Assess the cost-effectiveness of mechanical drying versus traditional sun drying.

Marks CO BL

4 5 4

Rubric	Marks
Assess the cost-effectiveness of mechanical drying?	2
versus the cost-effectiveness of traditional sun drying?	2

**Q24.** Give the names of material handling equipment's and explain the working of bucket elevator.

4 5 4

Rubric	Marks
Justify the need for economic analysis	2
before investing in post-harvest technology equipment?	2

**Q25.** Explain the difference between drying and dehydration and its principle.

4 5 4

<b>Rubric</b>	<b>Marks</b>
Explain the difference between drying and dehydration	2
and its principle?	2

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