



FIJI NATIONAL UNIVERSITY

College of Agriculture, Fisheries and Forestry

School of Agricultural Sciences and Forestry

Department of Crop Production

Bachelor of Science in Agriculture, Year III

Trimester I, 2018

Final Examination

GPB 701: PRINCIPLES OF SEED TECHNOLOGY

Time Allowed: 3 hours and additional 10 mins of reading time.

Total Marks: 100

INSTRUCTIONS:

1. This paper consists of five pages including one page of 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 the 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 has four sections – A, B, C, and D. All questions of this part are compulsory. Second part is Descriptive Type which has three sections E, F, and G.

I. OBJECTIVE TYPE QUESTIONS (40 marks)

To be answered only on the “Answer Sheet” provided.

| | | |
|-----------|-----------------------|------------|
| Section A | Apply the best answer | (10 Marks) |
| Section B | Fill in the blanks | (10 Marks) |
| Section C | State true or false | (10 Marks) |
| Section D | Terminology | (10 Marks) |

II. DESCRIPTIVE TYPE QUESTIONS (60 marks)

To be answered only on the “Answer Booklet” provided.

| | | |
|-----------|---------------------|------------|
| Section E | Your own definition | (10 Marks) |
| Section F | Short notes | (20 Marks) |
| Section G | Essay questions | (30 Marks) |

I. Objective type questions**Total Marks: 40****Note: Please answer only on the Answer Sheet provided.****A. Apply the best answer****(5 × 2 = 10 Marks)**

- A1.** Which of the following statement is correct regarding seed production?
(A) Basic seeds can be from several sources
(B) Any seed plot can be selected for production
(C) Importance is given to seed yield rather than the quality
(D) Harvested at physiological maturity
- A2.** For cross pollinated crops, which of the following generation models are usually suggested for seed multiplication?
(A) 5 and 6
(B) 4 and 5
(C) 3 and 4
(D) 2 and 3
- A3.** Through domestication, morphological traits from wild rice have changed and artificially selected in cultivated rice. Which of the following is NOT the selected traits?
(A) Erect growth habit
(B) Seed grain coloration
(C) Seed shattering habit
(D) Seed hull coloration
- A4.** The credit of seed certification can go to the people from which of the following country?
(A) China
(B) Japan
(C) Switzerland
(D) Sweden
- A5.** The inspection of seed crop is done at different stages of crop growth. Which of the following does NOT belong to the stages?
(A) Post-harvesting
(B) Flowering stage
(C) Post-flowering
(D) Time of sowing
- B. Fill in the blanks** **(5 × 2 = 10 Marks)**
- B1.** The _____ is the final moisture content of the grain or seed after being stored for some time with surrounding air of a certain temperature and relative humidity.
- B2.** Seed dormancy can be broken by applying _____ and other chemical treatments.
- B3.** Different forms of protection of new plant varieties have been existing in the developed countries through the system of _____.
- B4.** Cytoplasmic male sterile lines can be utilized for the development of commercial _____ production.
- B5.** _____ is a flowering pattern occurring at irregular intervals or only in a few places.

C. State True or False**(5 × 2 = 10 Marks)**

- C1.** Onion is a self-pollinated crop and efficient pollination depends largely on presence of wind at flowering time.
- C2.** Defective seeds can be classified as inert material.
- C3.** Vernalization is the induction of a plant's flowering process by exposure to the prolonged cold of winter, or by an artificial equivalent.
- C4.** Human domestication has created major crop species that we consume nowadays unlike selective breeding.
- C5.** The certified seeds must be free of seed borne diseases.

D. Please provide the correct terminology**(5 × 2 = 10 Marks)**

- D1.** _____ is the sum of seed with required genetic and physical purity that is accompanied with physiological soundness and health status.
- D2.** _____ refers to any plant part, which is used for raising an identical plant.
- D3.** _____ is the splitting at maturity along a built-in line of weakness in a plant structure in order to release its contents.
- D4.** _____ farm is one of the organic methods to produce rice.
- D5.** Tomato is an edible berry-type fruit or vegetable belongs to the family of _____.

II. Descriptive type questions**Total Marks: 60****Note: Please answer only on the Answer Booklet provided.**

- E.** Provide the definition for the following terms using your own words in description – Please answer any five.

(5 × 2 = 10 Marks)

- | | |
|----------------------------|----------------------------------|
| E1. Nasumin | E6. Lycopene |
| E2. Genetic purity | E7. Volunteer plants |
| E3. Nucleus seed | E8. Roughing |
| E4. Restorer line | E9. Genetic deterioration |
| E5. Physical purity | E10. Objectionable weed |

- F.** Analyze below descriptions and provide short answers – Answer any four.

(4 × 5 = 20 Marks)

- F1.** Difference between hybrid and heirloom tomatoes.
- F2.** What is a hybrid seed, and why could this be important?
- F3.** Seed certification can be completed in six broad phases. What are these six phases?
- F4.** Maize and teosinte, the evolutionary adaptations.
- F5.** The four types of mechanical drying systems.
- F6.** What is a seed test?
- F7.** Selective breeding and why do we need it?

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F8. Pollination strategies, self- vs. open-pollination.

G. Based on the knowledge you learned this trimester, synthesize and write an essay on the following – Please answer any two. (2 × 15 = 30 Marks)

- G1.** Why do we need seed certification?
- G2.** How can we solve the food and population issue when 2050 arrives?
- G3.** Please elaborate the three safe storage conditions for rice if considering for longer storage periods.

The End

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