



FIJI NATIONAL UNIVERSITY
College of Agriculture, Fisheries & Forestry
School of Agricultural Sciences
Department of Crop production
Bachelor of science in agriculture – year III
Trimester III Final Examination – 2017
GPB 702:Principles Of Plant breeding

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

Total Marks: 100

INSTRUCTIONS:

1. This paper consists of five pages.
2. Please check to see that all your paper is complete.
3. All answers should be written in Answer Booklet only.
4. **No** written or printed material and mobile phones are allowed in the examination hall
6. Marks allocated for each question appears at the side of each question so allocate your time accordingly.
7. 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 divided into three sections-A, B, and C.

I. OBJECTIVE TYPE QUESTIONS (40 Marks)

To be answered only on the Answer Sheet.

- Section A: Fill in the blanks. (10 Marks)
- Section B: Multiple-choice Questions. (10 Marks)
- Section C: Matching type. (10 Marks)
- Section D: Write True or False. (10 Marks)

II. DESCRIPTIVE TYPE QUESTIONS (60 marks)

- Section A: Short note questions. (15 Marks)
- Section B: Short answers type. (15 Marks)
- Section C: Long questions. (30 Marks)

I. OBJECTIVE TYPE QUESTIONS**A. Fill in the blanks.****(10 x 1 = 10 Marks)**

01. In secondary introduction variety may be subjected to isolate _____ variety.
02. Variety selected through bulk breeding method have _____ adaptation than pedigree method.
03. Backcross method of breeding is effective in transferring _____ trait.
04. Vegetative organ for propagation of turmeric is known as _____.
05. The germplasm actively used in breeding programme and normally stored for medium term (8-10 years) are known as _____.
06. _____, _____ and _____ are composite varieties released in Maize.
07. Genetic male sterility is employed, to produce hybrid seed in _____ and _____.
08. Transfer of pollen grains from the anther of the stigma of same flower is known as _____.
09. Self-pollination or autogamy leads to _____.
10. The opening of flowers only after completion of pollination is known as _____.

B. Multiple-choice questions: Select the correct answer.**(10 x 1 = 10 Marks)**

11. The objective of plant introduction

A.	To build up new industries	B.	To increase food production
C.	To get resistance against biotic stresses	D.	All of the above

12. During introduction of Potato, Potato Tuber moth came from:

A.	Germany	B.	Spain
C.	Italy	D.	France

13. Which of the following plants may cause ecological imbalance:

A.	Mango	B.	Sandalwood
C.	Eucalyptus	D.	Guava

14. .Johannsen proposed Pure line theory on the basis of his study on

A.	Beans	B.	.Cowpea
C.	.Pea	D.	.Tomato

15. In bulk breeding method, selection is done by:

A.	Natural	B.	Human
C.	Both (A) & (B)	D.	Only (B)

16. The concept of Multiline breeding was first suggested by Jensen in:

A.	1952	B.	1956
C.	1954	D.	1958

17. Basic material for launching crop improvement programme is:

A.	Germplasm	B.	Inbred
C.	Variety	D.	All of the above

18. Three way cross hybrid is represented by:

A.	A X B	B.	(A X B) X C
C.	(A x B) X (C x D)	D.	None of above

19. Average performance of a strain in a series of cross combination is known as:

A.	General combining ability (GCA)	B.	Specific combining ability (SCA)
C.	Combining ability	D.	None of the above

20. Hand emasculatation and dusting is done to produce hybrids in:

A.	Okra	B.	Bajra
C.	Rice	D.	Castor

C. Match the following:

(10 Marks)

21.	Individual plant selection based on progeny testing was proposed by	A.	Johannsen
22.	Concept of Pure line theory was proposed by	B.	Vilmorin
23.	In bulk breeding method, Individual plant selection is done in	C.	Goulden (1939)
24.	Single seed descent method was first advocated by	D.	Isogenic
25.	Lines that are genetically identical except for the allele at one locus	E.	Tuber
26.	Method for developing multiline in wheat was given by	F.	Combining Ability
27.	Potato is a type of	G.	Bulb
28.	Ability of a strain to produce superior	H.	Rhizome

	progeny, when crossed with other strains		
29.	Garlic is a type of	I.	F6 or Later generation
30.	Turmeric is a type of	J.	Borlaug and Gibler

D. Modified 'True' or 'False'. Write true if the statement is true otherwise underline the word/s that make the statement false and write the correct answer. (10 Marks)

31.	An variety is well suited to new environment or directly grown is known as secondary introduction	
32.	A selection to be effective when the character selected must be heritable.	
33.	A pure line is progeny of single self – fertilized Heterozygous individual.	
34.	Indigenous germplasm are those germplasm which are collected within a country.	
35.	Crossing between two inbreds and Pureline is known as – Double cross hybrid	
36.	Hybrid is an individual, as a result of cross between two genetically similar parents.	
37.	Composites are produced by mixing seeds of Phenotypically outstanding lines and encouraging open pollination in all possible combination.	
38.	Presence of Male and Female organ in the same flower is known as Bisexuality.	
39.	Maturation of Anther and stigma of a flower at the different time is called homogamy.	
40.	Maturation of pistil before anthers is called as Protogyny.	

II. Descriptive type Questions

(60 Marks)

A. Short note questions: attempt to answer five (5) out of seven questions only.
(3 marks each)

3 x 5 = 15 Marks

1. Provide objective of plant introduction.
2. Provide two Pre requisite of selection.

Apply your knowledge to discuss:

3. .Possible causes of variation in purlines.
4. Acclimatization
5. Microsporogenesis

Analyse:

6. Features of Germplasm
7. Synthetic Varieties

B. Short answers type: attempt to answer five (5) out of seven only).**(3 marks each)****3 x 5 = 15 Marks**

1. Provide demerits of plant introduction.
2. Provide, types of screening in mass selection
3. .Analyse demerits of Single seed descent method.

Analyse:

4. General Combining Ability
5. Composite Varieties
6. Polycross Test
7. Mechanism promoting self-pollination in plants.

**C. Long questions: attempt to answer four (4) out of six(6) questions only.
(7.5 marks each)****4 x 7.5 =30 Marks**

1. Demonstrate procedure of Mass selection, their merits and demerits.
2. Analyse backcross method and demonstrate, procedure of transfer of a dominant gene for disease resistance.
3. Analyse apomixes, and discuss different type of Apomixis .
4. Analyse autogamy and discuss mechanism promoting autogamy or self – pollination.
5. Compare genetic consequences of self - pollination and cross pollination.
6. Analyse way for evaluation of inbreds.

THE END

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