



KERALA AGRICULTURAL UNIVERSITY
B. Sc. (Hons.) Ag. 2018 admission
II Semester Final Examination-July-2019

Pbgn.1202

Fundamentals of Plant Breeding (2+1)

Marks: 50
Time: 2 hours

I Fill in the blanks **(10x1=10)**

- 1 Embryo develops without sexual fusion is called.....
- 2 Pure line theory was proposed by.....
- 3 The hybrid progeny developed by crossing two single cross hybrid is called hybrid.
- 4 The primary centre of origin for Sunflower is.....
- 5 Indirect selection process where a trait of interest is selected based on a marker linked to the trait is.....

State True or False

- 6 Dominant hypothesis pertaining to heterosis was proposed by Davenport.
- 7 Record keeping is important in pedigree method of breeding.
- 8 Mutation is a non recurrent process.
- 9 Aneuploid is having exact multiples of basic chromosome number.
- 10 Superiority of the F_1 over the parents is called inbreeding depression.

II Write short notes on ANY FIVE of the following **(5x2=10)**

- 1 Hardy Weinberg Law.
- 2 Differentiate inbreeding and out breeding.
- 3 Define apomixis. Classify it.
- 4 Compare synthetics and composites.
- 5 Explain multiline.
- 6 Functions of NPBGR.
- 7 Steps in registration of a plant variety.

III Answer ANY FIVE of the following **(5x4=20)**

- 1 What is meant by centres of origin and centre of diversity? Describe briefly primary and secondary centres of diversity.
- 2 Define self incompatibility. Discuss briefly the gametophytic system of self incompatibility? How it differs from sporophytic system?
- 3 What is clonal selection? Write breeding procedure for clonal selection.
- 4 Give a brief account of dominance and over dominance theories of heterosis.
- 5 Define mutation. What is the scope of mutation breeding in crop plants? Discuss the application of mutation breeding in crop improvement with examples.

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- 6 Define distant hybridization. What are the barriers in distant hybridization and how overcome these barriers?
- 7 What is participatory plant breeding? Write its merits and demerits.

IV Write an essay on ANY ONE of the following

(1x10=

- 1
 - a) What is polyploidy? Give its types.
 - b) Give two examples of auto and allopolyploidy in Indian crops.
 - c) What is the role of polyploidy in evolution?
 - d) Explain the scope of polyploidy in plant breeding. Give examples of crop species developed by polyploidy
- 2
 - a) What is backcross breeding?
 - b) Outline the procedure to incorporate a desirable recessive allele trait in the recurrent parent.
 - c) What is the effectiveness of backcross mating if the desired allele being transferred is linked with an undesirable allele and selection for it is not effective? Justify your answer.
