B.Sc. (Ag.) Honours Semester-VI Examination, 2017

Course No: GPB-321 (Breeding of Field and Horticultural Crops)

Signature of Centre Superintendent

Roll No. : (in figure) _____ (in words) _____

Student Index No. _____ Regn. No. _____ of _____

Time : Two Hours **Full marks : 40**

Questions are of value as indicated in the margin

Part - I
(Objective and Short Answer Type)
(Use only ball point pen)

Time : 20 minutes **Full marks : 10**

Note: 1. Answer in question paper itself.
2. Striking, rewriting or overwriting are not allowed in the objective type questions.

1. **State True (T) or False (F) in respect of the following statements:** 5×0.5=2.5

   a) Mass selection is very effective for a population with narrow genetic base. ☐

   b) Backcross breeding is used to develop multilines (near isogenic lines). ☐

   c) Sunflower is highly cross-pollinated crop. ☐

   d) Clone is genetically homozygous in nature. ☐

   e) *Sesamum indicum* is a very ancient oilseed crop. ☐

2. **Fill up the blanks with most appropriate words**: 5×0.5=2.5

   a) Selfing increases _____ of population at a rapid rate.

   b) The chromosome number of *Brassica campestris* is _____.

   c) _____ component of genetic variance arises from differences between two homozygotes of a gene.

   d) Papaya belongs to _____ family.

   e) The centre of origin of tomato is _____.

3. **Put Tick (√) mark to the correct among the alternative provided:** 10×0.5=5

   a) Endosperm protein zein is found in

      i) wheat iii) rice

      ii) maize iv) sorghum

   b) Sesame oil contains antioxidants like:

      i) Sesamin iii) Sesaminol

      ii) Sesamolinol iv) all the above

   c) Which of the following is not a major method for genetic improvement of cross-pollinated crops?

      i) Hybrid breeding iii) Mass selection

      ii) Recurrent selection iv) Single seed descent

P.T.O.

d) Loose smut is a common disease of –

i) Rice
ii) Wheat
iii) Maize
iv) Bazra

e) ICAR-NRRI is located in

i) Phillipines
ii) Barrackpore
iii) Cuttak
iv) Coimbatore

f) In which crop the variety 'ICPH-8', the world's first hybrid from ICRISAT had been evolved?

i) Rice
ii) Cotton
iii) Tomato
iv) Pigeon pea

g) Single crop containing about 40% protein and 20% oil, plays a major role in the world food system is:

i) Soyabean
ii) Sesame
iii) Mustard
iv) Groundnut

h) Pusa Ruby, the important and popular variety of tomato had been evolved by –

i) Selection
ii) Hybridization followed by selection
iii) Mutation
iv) Polyploidy breeding

i) IPR includes:

i) Patent
ii) Copyright
iii) PPV & FR
iv) All of these

j) In which crop, the variety 'JRO632' was evolved?

i) Tomato
ii) Bhindi
iii) Cotton
iv) Jute

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Part - II
(Descriptive Type)

Time : 100 Minutes **Full marks : 30**

Questions are of value as indicated in the margin

Answer *any three* questions.

4. a) Write the evolution of Bread Wheat. Mention various types of wheat according to their ploidy level. 3+2=5
   b) Classify the various groups of *Oryza sativa* and compare between them for major characters. 3
   c) Name the genus which is a close relative of *Zea* and mention its two important species. 1+1=2

5. a) State origin, distribution and species of cultivated jute. Name important varieties of each of the cultivated species of jute. 3+1=4
   b) Write the origin of American cotton and mention its genomic composition and ploidy level. 3
   c) Write the schematic diagram by showing the evolution of amphidiploid *Brassica sp.* based on U's triangle. 3

6. a) Write the various methods of ex-situ conservation of PGR. 3
   b) What are the main characteristics of clones? Compare clones and pure lines. 2+2=4
   c) What is gene-for-gene hypothesis? Discuss about vertical and horizontal resistance. 3

7. a) Write the origin, distribution of species and wild relatives or green gram and red gram. 2
   b) Discuss the breeding objectives and method in sugarcane. 4
   c) Name the various self-pollinated and cross-pollinated vegetable crops. Indicate the various steps for development of hybrids/varieties of various crops. 1+3=4

8. Write short notes on (***any four***) 2.5×4=10
   a) Hardy-Weinberg Law
   b) Bt Cotton
   c) Ideotype concept in crop improvement.
   d) Genotype x Environment interaction
   e) PPV & FR Act
   f) Floral Biology of Mango
