

M.Sc. (Ag.) Examination 2017

Semester-II

Genetics and Plant Breeding

Course: GPB-512

(Breeding Legumes, Oilseeds and Fibre Crops)

Time : 3 Hours

Full Marks : 50

Questions are of value as indicated in the margin.

(Write answer on the question paper itself)

Part I

1. Tick mark the appropriate answer (*any ten*) 1×10=10
- i) *Brassica juncea* has the genome (a) AACC (b) AABB (c) BBCC (d) BBDD
 - ii) Donor of Cytoplasmic Male Sterility in cultivated sesame is (a) *Sesamum alatum* (b) *S. malabaricum* (c) *S. mulayanum* (d) *S. prostratum*
 - iii) Sunflower originated in (a) America (b) Africa (c) China (d) Australia
 - iv) The chromosome number (2n) of new world cotton is (a) 26 (b) 30 (c) 52 (d) 60
 - v) The center of origin of mungbean is (a) South America (b) China (c) India (d) None
 - vi) Central Research Institute for Jute and Allied Fibres is located at (a) Coimbatore (b) Barrackpore (c) Bolpur (d) Kalyani
 - vii) Quality of jute depends upon (a) fibre length (b) fibre strength (c) fibre colour (d) all the above
 - viii) Cotton seed meal contains the antinutritional factor (a) aflatoxin (b) glucosinolates (c) BOAA (d) gossypol
 - ix) India was the first country to develop hybrid varieties in which crop (a) Rice (b) Wheat (c) Cotton (d) Jute
 - x) The botanical name of Asiatic tree cotton is (a) *Gossypium hirsutum* (b) *G. herbaceum* (c) *G. barbadense* (d) *G. arboretum*
 - xi) The inflorescence of Niger is (a) head (b) capitulum (c) both a & b (d) None
 - xii) CoRH. 1 is a hybrid variety of (a) Red gram (b) Bengal gram (c) Cowpea (d) Lentil
 - xiii) Mung bean has highest digestibility among grain legumes from (a) 50-60% (b) 60-75% (c) 25-38% (d) 83-90%

Part II

2. a) What is the main biosynthetic pathway of main fatty acids of rapeseed-mustard?
b) What are the breeding objectives of rapeseed – mustard with reference to seed yield, oil and seed meal quality?
c) Write down the evolution and relationships between members of genus Brassica.

2+5+3=10

P.T.O.

(2)

3. a) What are the putative parents of Black gram (*Vigna mungo*)?
b) Write down the steps involved in hybrid seed production of Pigeonpea.
c) What is the procedure of production and maintenance of male sterile line of pigeonpea? 1+5+4=10
 4. a) Classify groundnut based on growth habit
b) Write wild progenitors of groundnut
c) Briefly describe sub-specific and varietal classification of groundnut
d) Write down the breeding methods to improve groundnut. 1.5+1.5+3+4=10
 5. a) What are antinutritional and toxic properties of lathyrus?
b) Discuss breeding objectives and challenges for lathyrus.
c) Write some important varieties of lathyrus. 2+6+2=10
 6. a) Write on the species of cotton.
b) How was tetraploid cotton evolved?
c) Discuss the breeding objectives of cotton. 3+2+5=10
 7. Briefly discuss (**any four**) 2.5×4=10
 - a) Breeding soybeans for special uses
 - b) Hybrid seed production in Castor
 - c) Hybrid cotton
 - d) Breeding objectives of lentil
 - e) Quality characters of jute fiber
 8. Write down short note on the following (**any four**) 2.5×4=10
 - a) Wild relatives of black gram and green gram
 - b) Floral biology of sunflower
 - c) Genomes of cotton
 - d) Improvement of chickpea
 - e) 'Bt' cotton
-