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CS-79/06
AGRICULTURE
Paper-II

Time : 3 Hours]

[Full Marks : 300

- Note :** (1) Candidates should attempt Question No. 1 from Section-A and Question No. 5 from Section-B which are compulsory, and **any three** of the remaining questions, selecting at least one from each Section.
- (2) **All** questions carry equal marks.

SECTION – A

1. Answer any **three** of the following in about 200 words each : **20 × 3 = 60**
- (a) What do you mean by independent assortment of genes ? Illustrate with an example that linked genes cannot assort independently. Diagrammatically represent the coupling and repulsion phase of linkage. What will be the parental and recombinant gametes produced by an individual in repulsion phase ?
- (b) Write notes on any **four** :
- (i) Trisomics Vs triploids
 - (ii) DNA Vs RNA
 - (iii) Spontaneous Vs induced mutation
 - (iv) Mendelian inheritance Vs cytoplasmic inheritance
 - (v) Sex chromosome Vs autosomes.
- (c) Describe the various structural chromosome aberrations with the help of suitable diagrams. Draw the pachytene configurations when these aberrations are in heterozygous condition.
- (d) Define euploidy. Describe the cytological and morphological features of allopolyploids, the mode of their experimental induction and role in evolution and crop improvement.
2. (a) Differentiate between the following : **20 × 3 = 60**
- (i) Qualitative and quantitative traits
 - (ii) Mass selection and pureline selection
 - (iii) Pedigree and bulk method
 - (iv) Primary and secondary centres of origin of crops
- (b) List the various sources of disease resistance. Describe the backcross method of breeding if the disease resistance is governed by a dominant gene.
- (c) How the genetic engineering and plant tissue culture supplement classical plant breeding ?

3. Explain briefly the various classes of seed. What are the different parameters of quality seed ? Describe the steps involved in seed certification. 60
4. Answer any **three** of the following. 20 × 3 = 60
- Describe the mechanism of photosynthesis. Discuss briefly the external factors influencing the photosynthesis.
 - Describe the process of respiration in higher plants. How the process is affected by presence or absence of oxygen ?
 - What do you mean by plant growth regulator ? Give an account of their use in agriculture.
 - Discuss the mechanism of transpiration in plants. Is transpiration a necessary evil ? Justify.

SECTION – B

5. Answer any **three** of the following : 20 × 3 = 60
- Describe citrus decline in India. Explain the causes and control measures.
 - What do you mean by Hightech Horticulture ? In what way the hightech horticulture has improved the production of crops in last decade in India ?
 - Describe the role of fruits and vegetables in human nutrition giving suitable examples.
 - What do you mean by landscaping ? Give different designs and layouts of the gardens.
6. (a) What are the different diseases of mango in India ? Indicate the causes and control measures. 20
- (b) Integrated pest and diseases management. 20
- (c) Compatibility with rhizobial inoculants. 20
7. (a) Bee keeping in India 20
- (b) Mushroom cultivation 20
- (c) Dryland horticulture 20
8. Write on the following : 20 × 3 = 60
- High density Planting in orchards.
 - Protein – calorie malnutrition.
 - Food production and consumption trends in India.