2017

BOTANY

(Major)

(Cytogenetics, Plant Breeding and Biometrics)

Paper : 5.3

Full Marks : 60

Time : 3 hours

The figures in the margin indicate full marks for the questions

1. Answer the following : 1×7=7

(a) Why are gametes said to be pure for one character?

(b) What is the cause of Klinefelter's syndrome?

(c) According to Hardy-Weinberg principle the allele frequency of a population remains constant. How do you interpret the change of frequency of alleles in a population?

(d) Why is bagging of the emasculated flowers essential during hybridization experiment?

(e) What is standard deviation?

(f) Define nullisomy.

(g) What is responsible for recombination between linked genes?

2. Answer the following briefly : 2×4=8

(a) In snapdragon, a cross between true breeding red flowered (RR) plants and true breeding white flowered (rr) plants showed a progeny of plants with all pink flowers :

(i) The appearance of pink flowers is not known as blending. Why?

(ii) What is this phenomenon known as?

(b) Differentiate between gene flow and genetic drift.

(c) With the help of diagram define anaphase bridge.

(d) How does Mendelian inheritance differ from non-Mendelian inheritance?

3. Answer any *three* of the following questions : 5×3=15

(a) Give a comparative account of pureline selection and mass selection.

(b) State the reasons of Mendel's success in his experiments on inheritance of characters.

(c) Write about the evolutionary significance of duplication of chromosomal segments.

(d) Discuss about backcross and its significance.

(e) Discuss meiotic behaviour of translocation heterozygote.

4. Answer any *three* of the following questions :

(a) What is polygenic inheritance? Discuss the multiple-factor hypothesis for inheritance of polygenic traits. 2+8=10

(b) "Coupling and repulsion are two aspects of the same phenomenon called linkage." Explain with the help of examples. 10

(c) "Polyploidy has played a significant role in crop improvement." Justify. 10

(d) What is self-incompatibility? Discuss in detail the mechanism of self-incompatibility in plants. 2+8=10

(e) Write explanatory notes on : 5+5=10

(i) Median

(ii) *t*-test

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