

**NEW**  
**Part-III 3-Tier**  
**2019**

**BOTANY**  
**(Honours)**

**PAPER—VI**

*Full Marks : 90*

*Time : 4 Hours*

*The figures in the right-hand margin indicate full marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

**Group—A**

1. Answer any ten questions : 2×10
- (a) What is numerical aperture ?
  - (b) What is  $G_0$  stage ?
  - (c) State the components of nucleosome complex. What is chromatosome ?
  - (d) What is cis and trans faces of Golgi ?
  - (e) What is basic chromosome number ?
  - (f) What are restriction enzymes ?

*(Turn Over)*

- (g) How does transposon differ from retrotransposons ?
- (h) Why the genetic code called degenerate ?
- (i) What are synthetic seeds ?
- (j) Mention two implications of  $\chi^2$ -test.
- (k) Write the abbreviation of  $2n + 1-1$ .
- (l) Distinguish between test cross and back cross.
- (m) What is synaptonemal complex ?
- (n) What are Okazaki fragments ?
- (o) Mention the procedure of linkage mapping. How does a double trisomy differ from tetrasomy ?

### Group—B

2. Answer any *five* questions : 8×5
- (a) Structurally how does DNA differ from RNA ? Name the different types of DNA known so far. Describe the structure of a t-RNA molecule. 1+3+4
- (b) With suitable sketches describe the ultrastructure and functions of mitochondria. Why is it called as semiautonomous ? 6+2
- (c) With suitable example explain dominant type of gene interaction. Distinguish between complementary and supplementary type of gene interaction. 4+(2+2)

- (d) Mention the advantages of using Biofertilizer over chemical fertilizer. What are carriers ? Add a note on mass production of Biofertilizer. 2+2+4
- (e) What is Triticale ? Write in brief about the importance of polyploidy in crop improvement. 2+6
- (f) What is organogenesis ? Describe the method of protoplast culture and state its importance. 1+4+3
- (g) Distinguish between mean, median and mode. Define variance and relate it with standard deviation. 6+1+1
- (h) Write in brief about the steps followed by plant hybridization. Explain dominance and over dominance hypothesis. 4+4

**Group—C**

3. Answer any *two* questions : 2×15
- (a) "Meiotic deviation is partly reductional and partly equational"—Explain it with suitable sketches. Mention the roles of MPF and CDK in the regulation of cell cycle. With suitable examples describe the cytological crossing over. 6+2+7

- (b) With suitable diagrams describe the structural peculiarities and the consequences of different types of chromosomal aberrations.

Describe how 5-Bromouracil and Nitrous acid act as a chemical mutagen to DNA.

What is tautomeric shift ? 10+3+2

- (c) Mention the importance of Transgenic plants. Write in detail about the transgenic plants citing one suitable example. Distinguish between Ti and Ri plasmids. Discuss the mode of action of Bt Toxin.

1+8+3+3

- (d) Distinguish organogenesis and embryogenesis. Discuss on the application of recombinant DNA technology in human welfare. Mention the characteristics of a crop ideotype. 5+5+5