2015

(5th Semester)

BOTANY

SEVENTH PAPER

(Cytogenetics, Plant Breeding and Bioinformatics)

Full Marks : 55

Time : 2½ hours

(PART : B—DESCRIPTIVE)

(*Marks* : 35)

The figures in the margin indicate full marks for the questions

1. Write short notes on the following : 3½×2=7

(a) Duplication

(b) Cytoskeleton

Or

Give an account of the physical structure of chromosomes. 7

2. Write brief notes on the following : 3½×2=7

(a) Allopolyploidy

(b) Types of aneuploidy

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Or

Describe the different sources of chromosomal anomalies. 7

3. Briefly describe the following : 3½×2=7

(a) Cytoplasmic male sterility

(b) Plastid inheritance in *Mirabilis jalapa*

Or

What do you mean by mapping of genes on chromosomes? Discuss the different types of maps. 2+5=7

4. Write short notes on the following : 3½×2=7

(a) Mass selection

(b) Theories of hybrid vigour

Or

Describe the different types of physical mutagens and the mechanism of their action. 7

5. Describe briefly the following : 3½×2=7

(a) Biological database

(b) DNA sequence alignment

Or

Give a brief account of BLAST and its variants. 7

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(PART : A—OBJECTIVE)

(*Marks* : 20)

The figures in the margin indicate full marks for the questions

SECTION—A

(*Marks* : 5)

Put a Tick (✓) mark against the correct answer in the brackets provided : 1×5=5

1. In pericentric inversion, the inverted segment

(a) does not include the centromere ( )

(b) includes the centromere ( )

(c) is completely eliminated ( )

(d) is duplicated ( )

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2. A monosomic plant obtained from a plant with 24 chromosomes will have

   (a) 22 chromosomes ( )

   (b) 23 chromosomes ( )

   (c) 24 chromosomes ( )

   (d) 25 chromosomes ( )

3. Kappa particles in *Paramecium* are endosymbiotic bacteria belonging to the genus

   (a) *Enterococcus* ( )

   (b) *Helicobacter* ( )

   (c) *Haematobacter* ( )

   (d) *Caedibacter* ( )

4. A strain of an organism that is homozygous because of continued inbreeding is a

   (a) hybrid ( )

   (b) cybrid ( )

   (c) pure line ( )

   (d) mutant ( )

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5. A byte is equal to

(a) 4 bits ( )

(b) 8 bits ( )

(c) 12 bits ( )

(d) 16 bits ( )

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SECTION—B

(*Marks* : 15)

3×5=15

Write notes on the following :

1. Translocation

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2. Segmental polyploidy

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3. Karyotype

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4. Point mutation

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5. Significance of bioinformatics

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