3 (Sem–6) BOT M2

2020

BOTANY

(Major)

Paper : 6·2

(Bioinformatics, Computer Application and Biotechnology)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Fill In the blanks : 1×7=7

   (a) _____ program is used for searching nucleotide databases using a nucleotide query.

   (b) Cartagena Protocol is related to _____.

   (c) Class _____ restriction enzymes are used for cloning purposes.

(d) Roundup soybean is tolerant to _____.

(e) PubMed is a _____ database.

(f) RNA is starting material for _____ library construction.

(g) During Agrobacterium mediated gene transfer, virulence gene _____ product senses the presence of phenolic compounds released by wounded plant tissue.

2. Define the following : 2×4=8

(a) Probes and primers

(b) Binary vectors

(c) Restriction enzyme

(d) Micropropagation.

3. Write on ***any three*** of the following : 5×3=15

(a) Genetic features of Ti plasmid

(b) Cloning and expression vectors

(c) Plant functional genomics in crop improvement

(d) Maxam-Gilbert method of DNA sequencing

(e) DNA library.

4. Answer ***any three*** of the following : 10×3=30

(a) Discuss the scope and importance of Biotechnology and Bioinformatics in present context of Biological research. What further development do you foresee in the area of Biotechnology and Bioinformatics in India? 6+4=10

(b) Define transgenic plants. Discuss the advantages and disadvantages of genetically modified crops. 2+8=10

(c) Explain different methods available for production of haploid plants. Discuss the use of haploids in plant breeding. 5+5=10

(d) What is DNA fingerprinting? Describe the procedure of DNA fingerprinting. Mention some important uses of DNA fingerprinting technology. 2+5+3=10

(e) Define operating system. Discuss the advantages/disadvantages of using Windows and Linux operating system. 2+8=10

(f) With the help of appropriate diagram, explain the molecular mechanisms associated with Agrobacterium mediated genetic transformation. 10