

2019

BOTANY

(Major)

Paper : 6.2

(Bioinformatics, Computer Application
and Biotechnology)

Full Marks : 60

Time : 3 hours

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

1. Choose the correct answer/Fill in the blank :

1×7=7

(a) Which of the following is not a nucleotide sequence database?

(i) PDB

(ii) DDBJ

(iii) GenBank

(iv) EMBL

(b) WWW stands for _____.

- (c) 1 megabyte is equal to
- (i) 1000 bytes
 - (ii) 1024 bytes
 - (iii) 1024 kilobytes
 - (iv) 1000 kilobytes
- (d) Which technique is used for generation of haploid plant?
- (i) Meristem culture
 - (ii) Pollen culture
 - (iii) Both (i) and (ii)
 - (iv) None of the above
- (e) Who among the following is popularly known as the Father of Indian DNA Fingerprinting?
- (i) Lalji Singh
 - (ii) P. K. Gupta
 - (iii) Alec John Jeffreys
 - (iv) M. S. Swaminathan
- (f) Flavr Savr is genetically modified
- (i) rice
 - (ii) potato
 - (iii) tomato
 - (iv) soybean

- (g) Linux is a
- (i) malware
 - (ii) firmware
 - (iii) operating system
 - (iv) application program

2. Define the following : 2×4=8

- (a) BLAST
- (b) GenBank
- (c) Neighbour joining method of molecular phylogeny
- (d) Windows operating system

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

- (a) Somatic embryogenesis
- (b) Computer aided drug design
- (c) Distinction between micro-injection and electroporation
- (d) Sequence retrieval system
- (e) Role of DNA sequencing in modern biotechnology

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

- (a) Define Bioinformatics. Mention the different branches of Bioinformatics and their importance in Biology. Discuss the importance of Biological databases in present context of Biological research.

2+4+4=10

- (b) Describe briefly the principle of Sanger's dideoxynucleotide chain termination method. Discuss how DNA sequencing technology can be used for crop improvement programmes. 7+3=10
- (c) Explain Agrobacterium mediated gene transfer method. Describe briefly the achievements already made in the production of transgenic plants for improvement of agriculturally important traits. 4+6=10
- (d) What is the basic difference between genomic and cDNA library? Describe the method for construction of genomic or cDNA library. Mention some importance of cDNA libraries in genomic research. 2+5+3=10
- (e) What are the different components used in plant tissue culture media? Explain the methodology for haploid production from anther and pollen culture. 5+5=10
- (f) Define genomics and proteomics. Discuss how genomics and proteomics research can be utilized for crop improvement. 3+7=10

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