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(Held in 2023)

BOTANY

Paper : BOTHE5026

(**Bioinformatics**)

Full Marks : 60

Pass Marks : 24

Time : 3 hours

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

1. Choose the correct option from the following :

1×5=5

- (a) The term 'bioinformatics' was coined by
- (i) J. D. Watson
 - (ii) Paulien Hogeweg
 - (iii) Margaret Dayhoff
 - (iv) Frederick Sanger
- (b) Which of the following is not the application of bioinformatics?
- (i) Drug designing
 - (ii) Data storage and management
 - (iii) Understanding the relationship between organisms
 - (iv) None of the above

- (c) Proteomics refers to the study of
- (i) set of protein in a specific region of the cell
 - (ii) biomolecules
 - (iii) set of proteins
 - (iv) the entire set of expressed proteins in the cell
- (d) Which of the following is a multiple sequence alignment tool?
- (i) BLAST
 - (ii) PRINT
 - (iii) Clustal Omega
 - (iv) EMBOSS Needle
- (e) Which of the following is not a form of RNA?
- (i) tRNA
 - (ii) rRNA
 - (iii) mRNA
 - (iv) sRNA

2. Answer the following questions : 2×5=10
- (a) Write the limitations of bioinformatics.
 - (b) What are the objectives of DDBJ?
 - (c) What are scoring matrices?
 - (d) What is computer-aided drug design?
 - (e) What do you mean by phylogenetic tree?
3. Answer any *five* of the following questions : 5×5=25
- (a) Write about the research areas of bioinformatics.
 - (b) Make comparison between PAM and BLOSUM.
 - (c) Briefly describe the QSAR technique in drug design.
 - (d) Write a short note on Entrez.
 - (e) Briefly discuss about GenBank.
 - (f) Write about different types of biological database.
 - (g) Write a short note on BLAST.

(4)

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

$10 \times 2 = 20$

(a) Discuss about the applications of bioinformatics in modern biology. 10

(b) Write briefly the steps involved in the construction of molecular phylogenetic tree. 10

(c) Discuss briefly about the branches, aims and scope of bioinformatics.

$5 + 2 + 3 = 10$
