SKR/KW/24/2070

Faculty of Science & Technology

Seventh Semester B.E. (Information Technology) (C.B.S.) Examination

BIOINFORMATICS

(Elective—I)

Time—Three Hours] [Maximum Marks—80

INSTRUCTIONS TO CANDIDATES

(1) All questions carry marks as indicated.
(2) Solve Question No. **1 OR** Question No. **2**.
(3) Solve Question No. **3 OR** Question No. **4**.
(4) Solve Question No. **5 OR** Question No. **6**.
(5) Solve Question No. **7 OR** Question No. **8**.
(6) Solve Question No. **9 OR** Question No. **10**.
(7) Solve Question No. **11 OR** Question No. **12**.
(8) Due credit will be given to neatness and adequate dimensions.
(9) Assume suitable data wherever necessary.
(10) Illustrate your answers wherever necessary with the help of neat sketches.

1. (a) Explain the interdisciplinary nature of Bio-informatics. 6
   (b) Describe the objectives of Bioinformatics. Also give its overview. 7

OR

2. (a) Write a note on reference system of metadata. 7
   (b) "Bioinformatics proved itself to be Interdisciplinary in nature" – Justify the given statement. 6
3. (a) What is multiple sequence alignment ? Describe the applications of multiple sequence alignment. 7
   (b) Discuss the central Dogma of Molecular biology in brief. 6

OR

4. (a) Explain translation of mRNA into protein. 7
   (b) Write notes on :
   (i) Problems in molecular approach
   (ii) Problems in bioinformatics approach. 6
5. (a) Explain briefly the structure of :
   (i) DNA
   (ii) RNA. 8
   (b) Describe tertiary and quaternary structure of proteins. 6

OR

Model Questions

6.	(a)	Discuss DNA Replication and Transcription in detail.	8
	(b)	Write a note on Nucleic Acids.	6
7.	(a)	Explain parsing BLAST output using Perl.	7
	(b)	What is CORBA ? Discuss CORBA architecture.	6
		OR	
8.	(a)	What are the computational skill required for bio-information ? Write elementary commands in Linux operating sytem.	7
	(b)	Write a note on Bioperl.	6
9.	(a)	What is Genome ? Explain Genome sequencing in brief.	7
	(b)	Explain Biological data warehouses.	6
		OR	
10.	(a)	Explain single nucleotide polymorphism.	7
	(b)	Explain the importance of controlled vocabularies.	6
11.	(a)	Explain macromolecular structure.	7
	(b)	Explain Hierarchies and Graphical models in brief.	7
		OR	
12.	(a)	How the graphical models are used to identify patterns ?	7
	(b)	Explain major steps in pattern recognition and discovery process.	7

PRS/KS/24/2397

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1. (a) Explain the use of finding new type of data online. 7

   (b) What challenges does biology offer to computer scientists ? 6

OR

2. (a) Explain reference systems for metadata. 7

   (b) Explain the interdisciplinary nature of bio-informatics. 6

3. (a) Discuss the central Dogma of Molecular biology in brief. 6

   (b) Write a note on Transcription of DNA. 7

OR

4. (a) Describe the systems approach in biology concerned with bioinformatics. 7

   (b) Write notes on : 6

   (i) Problems in molecular approach and

(ii) Problems in bioinformatics approach.

5. (a) Explain the structure of RNA with suitable diagram. 7

(b) Explain methods of predicting protein structures. 7

OR

6. (a) Discuss DNA Replication and Transcription in detail. 8

(b) Write a note on Nucleic Acids. 6

7. (a) Explain parsing BLAST output using perl. 7

(b) Explain flat file database with example. 6

OR

8. (a) Give advantages of Linux operating system over traditional OS. 6

(b) What are the computational skills required for bio information ? Write elementary commands in Linux operating system. 7

9. (a) Explain the importance of controlled vocabularies. 6

(b) Discuss general data retrieval techniques in brief. (any two) 7

OR

10. (a) What is single nucleotide polymorphism ? 7

(b) Explain biological data warehouses. 6

11. (a) State the significance of Generic variability. 7

(b) Explain Hierarchies and graphical models in brief. 7

OR

12. Write notes on any three : 14

(i) Generic variability.

(ii) Chemical compounds.

(iii) Importance of clinical data.

(iv) Representation of patterns.