Total No. of Questions :12]

SEAT No. :

P2826

[Total No. of Pages :3

[5154] - 207

B.E. (I.T.)

BIOINFORMATICS

(2008 Course) (Semester - II) (Electrive - IV)

Time : 3 Hours] *[Max. Marks :100*

Instructions to the candidates:

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6 from section - I and Q7 or Q8, Q9 or Q10, Q11 or Q12 from section - II.***
2) ***Answer three questions from section I and three questions from section II.***
3) ***Answers to the two sections should be written in separate answer - books.***
4) ***Neat diagrams must be drawn wherever necessary.***
5) ***Assume suitable data, if necessary.***

SECTION-I

Q1) a) What are different Molecular and bioinformatics techniques. **[8]**

b) What is Bio Informatics? Enlist Bioinformatics Applications. **[8]**

OR

Q2) a) Explain the working of Central dogma of molecular biology with neat diagram. **[10]**

b) Discuss the bioinformatics databases which are accessible on the internet with appropriate examples. **[6]**

Q3) a) Explain in brief the data visualization techniques applicable to Bioinformatics. Discuss any two visualization tools with example. **[8]**

b) List different computational methods of sequence alignment and discuss any two in detail in brief. **[8]**

OR

P.T.O.

Q4) a) Differentiate between clustering and calssification. Discuss in breif the K-means clustering Algorithm. **[8]**

b) Write short note on gene expression and microarrays. **[8]**

Q5) a) Write short notes on:

i) Pairwise Sequence Alignment (PSA) **[5]**

ii) Multiple Sequence Alignment (MSA) **[5]**

b) Explain the text mining with NLP Process. **[8]**

OR

Q6) Write a short note on: **[18]**

a) Substitution Matrix.

b) Dynamic Programming.

c) Word Method.

SECTION-II

Q7) a) What is drug discovery? Explain various steps of drug discovery. **[10]**

b) Write about any one of protein secondary structure predictions methods. **[8]**

OR

Q8) a) What are the components involved in a modeling and simulation system? **[8]**

b) Draw and explain Collaboration-Communication model with appropriate examples. **[10]**

Q9) a) Explain BLAST algorithm in detail with neat diagrams. **[8]**

b) Explain FASTA algorithm. What FASTA programs are available for sequence. **[8]**

OR

Q10)a) What are the heuristic methods employed for database searching. Explain Gapped Blast. What are the applications of such database searches. **[8]**

b) Differentiate in the approach of BLAST and FASTA? **[8]**

Q11)a) Mention applications of genetic engineering. **[8]**

b) What are the natural causes of degradation of ecosystem? **[8]**

OR

Q12)a) Write short notes on Genetic Engineering. **[8]**

b) Define Biotechnology. What is the significance of environmental Biotechnology. **[8]**

EEE