[52] SEAT No._____ No. of Printed Pages: 02

(52) Sardar Patel University
B.Sc. Examination -Semester 6th
US06CGEN04: Bioinformatics
Subject: Genetics
Monday 1st April, 2019
10:00 am to 1:00 pm

Total Marks: 70

Note:
Figures to the right indicate marks.
Draw neat and labelled diagram, wherever necessary.

Q.1. Multiple choice questions [10x1=10]

1. The brain of any computer system is
   a) ALU b) Memory c) CPU d) Control unit
2. Vacuum tubes were used in
   a) First generation computer b) Second generation computer
   c) Third generation computer d) Fourth generation computer
4. PDB is
   a) Database for nucleotide sequences b) can be determined by gel electrophoresis
   c) composite database d) database for three dimensional structure of biological macromolecule
5. Uppermost bar in the webpage showing the name of the application is called _____
   a) status bar b) menu bar c) task bar d) title bar
6. Continuous set of spaces in the sequence
   a) Match b) Gaps c) Mismatch d) None of the above
7. Alignment method suitable for aligning closely related sequence is _____
   a) multiple sequence alignment b) pair wise alignment
   c) global alignment d) local alignment
8. BLAST X program is used for
   a) translate protein sequence b) translate DNA database
   c) translate input sequence d) none of these
9. Sequence of amino acids in the polypeptide chains is known as the _____ structure of a protein
   a) Primary b) Secondary c) Tertiary d) Quaternary
10. A series of codons from a single strand of DNA sequence which can be "read" in three different ways, depending on whether one starts at the first nucleotide position, the second or third
    a) Reading Frame (RF) b) Alternative Splicing
    c) Open Reading Frame (ORF) d) mRNA Processing

Q.2. Attempt any Ten [10x2=20]

1. Difference between RAM and ROM.
2. Differentiate input and output device in computer system.
3. How wet lab differ from dry lab?
4. Define Bioinformatics and its important fields?
5. Briefly explain the role of internet in the growth of bioinformatics.
6. Differentiate primary and secondary database.

7. Briefly describe applications of BLAST software package.
8. Explain significance of gap penalty.
9. Discuss the important features of ORF.
10. Graphically explain the structure of gene.
11. Enlist and briefly explain tool for protein structure prediction methods.
12. Describe alpha helix and beta sheet?

Q.3. Briefly explain the generations of computers. Draw a labelled diagram of computer with peripherals. [10]

OR

A. What is OS? Give a comparative account of Windows and Unix. [05]

B. Write a short note on the applications of MS office. [05]

Q.4. What is database? Discuss biological database and their types? Narrate the NCBI model (architecture) in maintenance of biological data. [10]

OR

A. Narrate the goal, scope and enlist the applications of bioinformatics. [06]

B. Write short note on Genbank. [04]

Q.5. A. Write a detail note on BLAST. [05]

B. Compare freeware and shareware softwares. [05]

OR

A. Write a detailed note on sequence alignment and their applications. [07]

B. Differentiate local alignment and global alignment with example. [03]

Q.6 What is gene? Compare gene organization in prokaryotes and eukaryotes. Narrate the methods used for gene prediction in prokaryotes. [10]

OR

Briefly describe the level of organization in proteins. Enlist the tools used in secondary structure prediction and explain any one in detail. [10]

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