Q. P. Code: 33983

2 ½ Hours

Total Marks: 75

1. Attempt **all** questions.
2. **All questions** carry **equal** marks.
3. Draw **neat labeled diagrams** wherever necessary.
4. Use of **log tables** and **non-programmable calculator** is **allowed**.
5. For **Q 2, Q 3 and Q 4** attempt A and B **OR** C and D.

Q 1 Do as directed (Any fifteen) 15

1. _____ is not an input device.
   a. Mouse b. Keyboard c. Stylus d. Printer
2. _____ is a finite, precise, unambiguous sequence of instructions capable of being carried out by a machine in a finite time.
   a. Logarithm b. Flowchart c. Algorithm d. Recipe
3. A memory cell which does not lose the bit stored in it when no power is supplied to the cell is known as a _____.
   a. non-volatile cell b. volatile cell c. battery cell d. permanent cell
4. _____ is an example of EEPROM.
   a. CD-ROM b. Floppy disk c. Magnetic tape d. Flash drive
5. *AND*, *OR* and *NOT* are examples of _____ operators.
   a. computer b. Boolean c. Euclidean d. Newtonian
6. _____ is not an internet protocol.
   a. http b. https c. ftp d. wwwp
7. _____ is a specialized database for baker's yeast.
   a. Pubmed b. Taxonomy c. ProSite d. SGD.
8. Algorithm used to compute Local Alignment.
9. What is phylogenetic analysis?
10. Define Algorithm.
11. What is a subsequence?
12. Define Noise with respect to bioinformatics.
13. What is E-value?
14. What is a Probe?
15. The value of coefficient of correlation is _____, if the two variables show perfect negative correlation.
16. If X is dependent variable and Y is independent variable, what is the regression line?
17. A contingency table in a chi-square test has 3 rows and 3 columns, what will be the degree of freedom?
18. How is type II error made in statistical hypothesis testing?

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19. State true or false: Z-test is used when the sample size is more than 30.
20. What is null hypothesis?

Q. 2 A With suitable examples explain - primary and secondary databases. **08**

Q. 2 B Explain the need for classifying proteins based on motifs and patterns. **07**

OR

Q. 2 C Elaborate on the databases classifying proteins based on structure. **08**

Q. 2 D Comment on Rasmol as a protein visualization software. **07**

Q. 3 A Explain BLAST. **08**

Q. 3 B What do you understand by Dot plots? How does it differ from dynamic programming? **07**

OR

Q. 3 C PSI-BLAST is a popular program for exploring protein family relationships. Discuss the areas of applications of this program. **08**

Q. 3 D How can you compute global alignment using the Needleman-Wunsch algorithm? **07**

Q. 4 A Find Coefficient of correlation for the following data: **08**

X	1	2	3	4	5
Y	1	2	3	4	5

Q. 4 B Explain Chi-square with a suitable example. **07**

OR

Q. 4 C Calculate regression coefficients b_{xy} and b_{yx} for the following data and calculate x when y =15. **08**

x	Mean = 10	Standard deviation is 8	Coefficient of correlation is +1
y	Mean = 20	Standard deviation is 10	

Q. 4 D What is t-test? Give its two types. **07**

Q. 5 Write Short notes on **any three** of the following **15**

a. Operating system.

b. World Wide Web.

c. Gapped BLAST.

d. Multiple Sequence Alignment.

e. Types of correlation.

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