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Class – B.Sc. II Sem (Voc) Bioinfo.

Subject – Bioinformatics

Paper – A

Time Allowed : 3 Hours

Maximum Marks : 75

Note :- Q No. 1 is compulsory. It contains 10 parts and each part is of one and half marks.

Q 1. Define the following terms.

(a) Define Data and Information

(b) Define Foreign Key

(c) Define Entity and Attribute

(d) Define the terms view in SQL

(e) Define Instance and Schema

(f) Define Symmetric Matrix

(g) Find the sum of the vectors $\vec{a} = \hat{i} - 2\hat{j} + \hat{k}$,

$\vec{b} = -2\hat{i} - 4\hat{j} + 5\hat{k}$ and $\vec{c} = \hat{i} - 6\hat{j} - 7\hat{k}$

(h) Find the derivative of $(x^2+1)^2$

(i) Evaluate $\int \left(\frac{x^2 + x + 2}{x} \right) dx$

(j) Define Probability.

Unit I

Q2.(a) Find the inverse of $\begin{bmatrix} 1 & 1 & 3 \\ 1 & 3 & -3 \\ -2 & -4 & -4 \end{bmatrix}$

(b) Show that the points A $(-2\hat{i} + 3\hat{j} + 5\hat{k})$, B $(\hat{i} + 2\hat{j} + 3\hat{k})$ and C $(7\hat{i} - \hat{k})$ are collinear.

Q3.(a) Let f be a function defined by

$$f(x) = \begin{cases} \frac{x}{|x| + 2x^2}, & x \neq 0 \\ 0, & x = 0 \end{cases}$$

Evaluate $\lim_{x \rightarrow 0^+} f(x)$ and $\lim_{x \rightarrow 0^-} f(x)$. What can you say about $\lim_{x \rightarrow 0} f(x)$.

(b) Find $\frac{dy}{dx}$, when $y = \frac{x^2 \sin x}{1-x}$

UNIT - II

Q4.(a) Evaluate $\int \left(x^{2/3} + 2e^x - \frac{1}{x} \right) dx$

(b) Solve $\frac{dy}{dx} = \frac{3x^2}{1+y^2}$

Q 5.(a) If $P(A) = 7/13$, $P(B) = 9/13$, $P(A \cap B) = \frac{4}{13}$, Find $P(A/B)$

(b) Bag A contains 2 white and 3 red balls and bag B contains 4 white and 5 red balls. One ball is drawn at random from one of the bags and it is found to be red. Find the Probability that it was drawn from the Bag B.

UNIT - III

Q6.(a) Discuss the characteristics of DBMS. 7

(b) Write about components of DBMS. 8

OR

Q 7.(a) Write about architecture of DBMS. 7

(b) Explain the E-R Model with Diagram. 8

UNIT - IV

Q 8. (a) Explain the following SQL statements with suitable example.

(i) Update

(ii) Commit

(iii) Roll back

(iv) Alter

(b) Write about different datatypes used in SQL. 8

7

3

OR

- Q 9(a) Explain the Nested Queries in SQL. 8
- (b) What is a view? Write about its types with example. 7
