SUBJECT CODE: 19BI/PE/BS15

M.Sc. DEGREE EXAMINATION NOVEMBER 2019
BIOINFORMATICS
FIRST SEMESTER

COURSE   :   **ELECTIVE**
PAPER   :   **BIOMATHEMATICS AND BIOSTATISTICS**
TIME   :   **3 HOURS**   **MAX. MARKS: 100**

<div align="center">

SECTION A   **(20x1=20)**
</div>

Answer ALL questions.

1. If $\begin{bmatrix} x+3 & 4 \\ y-4 & x+y \end{bmatrix} = \begin{bmatrix} 5 & 4 \\ 3 & 9 \end{bmatrix}$ Find x and y.

2. Let R = { (3, 3) (6, 6) ((9, 9) (12, 12), (6, 12) (3, 9) (3, 12), (3, 6) } be a relation on the set A = { 3, 6, 9, 12 }. What is the relation ?

3. Let R ={ (1,3) (4,2)(2,4)(2,3)(3,1)} be a relation on the set A = { 1,2,3,4} What is the relation R ?

4. Intersection of sets A and B is expressed as ?

5. If A = {0,2) and B = {1,3), then what is the Cartesian product ?

6. If A =[5,6,7] and B=[7,8,9] then A U B is equal to:

7. Define the Hardy Weinberg principle.

8. Probability of an occurrence of an event lies between ?

9. What is the conventional level of significance typically used in statistics?

10. In which distribution is mean and variance equal?

11. A coin is tossed five times in succession. What is the probability of getting at least 4 heads?

12. What is the range of a regression coefficient ?

13. How can sampling error be reduced ?

14. If 3 letters are to be put in 3 addressed envelopes randomly, what is the probability that none of the letters are in the correct envelope ?

15. If there is a linear trend present in the population, then which of the following methods is the most efficient sampling technique ?

16. If the order of the matrix A is m x p and the order of B is p x n, then what is the order of the matrix AB ?

17. Define Subsets

18. Define Standard deviation

19. If $|A| = 0$, then what is A ?

20. Order of a matrix [2 5 7] is ?

SECTION B

Answer any FOUR questions   **(4x10=40)**

21. Calculate standard deviation for the following table.

Bush	1	2	3	4	5	6	7	8	9	10
Flowers	9	2	5	4	12	7	8	11	9	3

Bush	11	12	13	14	15	16	17	18	19	20
Flowers	7	4	12	5	4	10	9	6	9	4

22. Compute the mode, median, mean and range from the following data :

    13, 18, 13, 14, 13, 16, 14, 21, 13

23. A pair of dice is rolled twice. Calculate the probability of getting with 7 or 11 on each roll. What is addition theorem in probability ?

24. Work out the independent t test finds out whether the body length of 2 groups of 10 fishes in 2 locations. T score $t_{0.05 (9)} = 1.833$

	1	2	3	4	5	6	7	8	9	10
Gr X	10	9	11	12	8	7	12	18	10	9
Gr Y	12	11	13	14	6	10	12	14	11	12

25. Find out the correlation coefficient from the following table :

Patient	Age (X)	Glucose level (Y)
1	43	99
2	21	65
3	25	79
4	42	75
5	57	87
6	59	81

26. Discuss the different ways in which data can be presented.

27. Write short notes on types of sets, subsets, complement, union and intersection.

SECTION C

Answer any TWO questions **(2x20=40)**

28. Write an essay on the types of regression and regression analysis.

29. Elaborately explain the various sampling methods.

30. Describe hypothesis testing ? Explain ANOVA F-test.

31. Elaborate upon the Normal, Binomial and Poisson distribution.

.   **********