B.Sc. BIOTECHNOLOGY
FOURTH SEMESTER
BIOSTATISTICS
BBT-404

(Use separate answer scripts for Objective & Descriptive)

Duration: 3 hrs.   **Full Marks: 70**

[PART-A : Objective]

Time: 20 min.   **Marks: 20**

Choose the correct answer from the following: *1X20=20*

1. State True or False and explain-"Ramen's height is 6 feet, Rahim's weight is 58 Kgs and Hari's monthly salary is 10,000. The following data are/are not statistics.
   a. True   **b.** False
   Explanation:

2. Population characteristics are called…………………

3. "The class limits and class boundaries of an exclusive class are same. (True / False)
   a. True   **b.** False

4. What will be the most suitable diagrams to represent the "Birth rates and Death rates in the different states of the North-Eastern region according to 2011 census?
   a. Simple bar diagram   **b.** Multiple bar diagram
   c. Pie diagram   **d.** Sub-divided bar diagram

5. Which of the following represent median?
   a. First Quartile   **b.** Second Quartile
   c. Third Quartile   **d.** Fourth Quartile

6. A unit less measure of dispersion is
   a. Standard deviation   **b.** Range
   c. Mean deviation   **d.** Coefficient of variation.

7. By using mean and median, write down the Karl Pearson's coefficient of skewness.

8. The correlation between two variables X and Y is negative, then the regression coefficient of Y on X is
   a. Positive   **b.** Negative
   c. Zero   **d.** Not Certain

9. Which of the following measure is considered to be ill defined?
   a. Mean   **b.** Median
   c. Mode   **d.** Quartiles

10. Two regression lines coincide if
    a. $r = 0$ **b.** $b_{yx} . b_{xy} = 1$
    c. $r = 1$ **d.** both (b) and (c)

11. If A and B are mutually exclusive events, then P(A∩B) equals to...........................

12. If for two events A and B, P(AUB) = 1, then A and B are
    a. Mutually exclusive   b. Equally likely
    c. Dependent   d. Exhaustive.

13. If A is an uncertainty event, then
    a. $P(A) \geq 0$,   b. $0 \leq P(A) \leq 1$
    c. $0 < P(A) < 1$ d. None

14. List out all the possible outcomes when two fair coins are tossed.

15. If all the events of random experiment have equal chances of occurrences, then the events are
    a. Mutually exclusive   b. Equally likely
    c. Exhaustive   d. None of the above

16. AM of three numbers 3, x and 15 is 8, what is the value of x?

17. If mean = 30, median = 25, mode =?

18. If mean = 10, CV -= 40%, then variance =
    a. 4   b. 12
    c. 8   d. 16

19. If X and Y are independent, then the correlation coefficient between X and Y is _____
    a. Undetermined   b. 0
    c. Positive   d. Negative

20. The product of two regression coefficients i.e. $b_{yx} \cdot b_{xy}$ is always
    a. 1   b. $< r^2$
    c. $\leq r^2$ d. None of these.

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(**PART-B : Descriptive**)

Time: 2 hrs. 40 min.   Marks: 50

[**Answer question no.1 & any four (4) from the rest**]

1. Write the characteristics and limitations of Statistics.   10

2. Find the coefficient of variation from the following data: 10

Age (under in years):	10	20	30	40	50	60
No. of persons dying:	15	30	53	75	100	110
Age (under in years):	70	80				
No. of persons dying:	115	125				

3. Why is the standard deviation considered to be the best measure of dispersion? Write its limitations.   10

4. In a distribution AM = 65, median = 70 and the coefficient of skewness = - 0.6. Find (i) mode and (ii) coefficient of variation.   2+3+5=10

5. Given bivariate data: 10

X :	3	4	5	6	8	11
Y :	18	12	10	8	7	5

   (i) Fit the two regression lines and estimate Y when X = 10.
   (ii) Find the Karl Pearson's coefficient of correlation.

6. If A, B and C are three mutually exclusive and exhaustive events so that $\frac{1}{3}P(C) = \frac{1}{2}P(A) = P(B)$, find P(A), P(B) and P(C).   10

7. A bag contains three white and five black marbles. Two marbles are drawn successively in without replacement. Find the probability that the marbles drawn are of same colour.   10

8. Discuss the advantages and disadvantages of sample survey method over the method of complete enumeration.   10

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