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Total No. of Pages : 03

Total No. of Questions : 09

B.Sc. (BT) (2018 Batch) (Sem.-2)

**BIOSTATISTICS**

Subject Code : BSBT-203-18

M.Code : 75874

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. **SECTION-A** is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. **SECTION-B** contains **FIVE** questions carrying **FIVE** marks each and students have to attempt any **FOUR** questions.
3. **SECTION-C** contains **THREE** questions carrying **TEN** marks each and students have to attempt any **TWO** questions.

**SECTION-A****1. Write briefly :**

- a) If on an average 8 ships out of 10 arrive safely at a port. Find the mean and standard deviation of number of ships arriving safely out of a total of 1600 ships.
- b) What are regression coefficients? State the properties of regression coefficients.
- c) What are the advantages of randomized block design?
- d) What do you understand by power of a test in statistical analysis ?
- e) Define Null Hypothesis and Alternate Hypothesis.
- f) Describe role of curve smoothening.
- g) What are derivative curves?
- h) In which situations, polynomial fittings are used?
- i) Give fundamental applications of Matrices manipulation.
- j) In a group of 125 students 70 passed in mathematics, 55 passed in statistics and 30 passed in both. A student is selected at random. Find the probability that he has passed in at least one subject.

### SECTION-B

2. A building contractor is interested in knowing whether any relationship does exist between the number of building permits issued and the volume of sales of such buildings in some passed years. He collects data about sales (Y in thousand rupees) and the number of building permits issued (X in hundreds) in past 10 years. The results are given below :

$$\sum x = 117, \sum y = 78, \sum xy = 981, \sum x^2 = 1491, \sum y^2 = 662$$

- What level of sales can you expect next year if it is hoped that 2000 building permits would be issued ?
  - What change in sales is likely to take place with an increase of 100 building permits?
3. Describe various methods of numerical integration.
4. Write a note on graphical presentation of data.
5. In a shooting competition, the probability of a man hitting a target is  $1/5$ . If he hits the target 5 times. What is the probability of hitting target.
- Only two times
  - At least two times
  - At most two times?
6. What are the properties of Determinants? Prove that

$$\begin{vmatrix} 1 & x & yz \\ 1 & y & zx \\ 1 & z & xy \end{vmatrix} = (y-z)(z-x)(x-y)$$

### SECTION-C

7. a) Five thousand candidates appeared in a certain examination carrying a maximum of 100 marks. It was found that the marks were normally distributed with mean 39.5 and standard deviation 12.5. Determine approximately the number of candidates who secured a first class for which a minimum of 60 marks is necessary. The proportion of the area of a normal curve at a deviation Z is : (5)

Z	1.5	1.6	1.7	1.8
Area	0.93319	0.94520	0.95543	0.96407

- b) Calculate the value of mean and standard deviation from the following frequency distribution. (5)

Variable	10-25	25-40	40-55	55-70	70-85	85-100
Frequency	6	50	44	26	3	1

8. Write notes on :

a) Design of experiments (5)

b) Fourier transformation (5)

9. a) Ten individuals are chosen at random from a population and their heights are found to be in inches 63, 63, 66, 67, 68, 69, 70, 70, 71, 71. In the light of these data discuss the suggestion that the mean height in the universe is 66 inches. (4)

b) In a cosmetic company, the sales manager make the performance report on three salesmen during the three seasons. Check that there is significant difference between salesman's performances and between seasons using 0.05 level of significance. (6)

Salesman	Season		
	Summer	Rainy	Winter
A	50	40	41
B	30	45	55
C	45	36	48

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**