REV-01 BFST/17/22

2023/06

SET

## B.Sc. FOOD SCIENCE & TECHNOLOGY **FOURTH SEMESTER** STATISTICS AND DATA ANALYSIS BFST-405

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 3 hrs.

Full Marks: 70

Time: 30 mins.

**Objective** 

Marks: 20 1×20=20

Choose the correct answer from the following:

The methods of data analysis in research are:

- a. Experimental methods
- c. Statistical methods
- b. Scientific methods
- d. None of the above
- Which of the following statement is not true?
  - a. Research is based on evidence
- b. Research is based on believes
- c. Research is based on scientific methods d. None of the above
- Histograms can be drawn only for.....
  - a. Continuous frequency distribution
- b. Discrete frequency distribution
- c. Frequency distribution
- d. None of the above
- Which of the following pairs of measures are independent of the extreme values?
  - a. Mean and median

b. Median and mode d. None of the above

- c. Mean and mode
- In a certain distribution, median = 30, mode = 28, mean =?
- a. 34

b. 13

c. 31

- d. 32
- One of the drawbacks of the measures of central tendency is that:
  - a. It cannot measure the variation of the b. It cannot measure the average value of data
    - the data

c. Both a and b

- d. Neither a nor b
- 7. Which of the following is the best measure of dispersion?
  - a. Mean

b. Mean deviation

c. Standard deviation

- d. None of the above
- In a certain distribution, if CV = 20%, standard deviation = 5, what is mean?
  - a. 15

b. 25

- d. None of the above
- If one of the regression coefficients is positive, the value of the correlation coefficient is:
  - a. Positive

b. Negative

c. Zero

- d. None of the above
- 10. For two variables, there is/are:
  - a. One line of regression
- b. At least one line of regression
- c. At least two lines of regression
- d. Two lines of regression

1

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11. Sample characteristics are called	a. Sampling c. Statistics d. None of the above  12. The corresponding statistic of the population variance is: a. Sample proportion d. None of the above  13. A process of assigning treatments to various experimental units in a purely chance manner is called: a. Local control c. Randomization d. None of the above  14. Type-I error is: a. Not rejecting null hypothesis when it is not true c. Rejecting null hypothesis when it is not true c. Rejecting null hypothesis when it is not true c. Rejecting null hypothesis when it is not true c. There is significant difference between the true and hypothetical value c. There is significant difference between the true and hypothetical value of the parameter c. Both a and b d. Neither a nor b  17. ANCOVA procedure is a combination of: a. Analysis of variance and regression analysis c. Analysis of variance and regression analysis c. Analysis of variance and regression analysis c. Analysis of variance and Fisher's F-statistic  18. If the correlation between two variables X and Y are uncorrelated c. X and Y are uncorrelated c. X and Y are perfectly linearly related  19. Students t-test is applied when: a. Sample size is small and the population standard deviation is given c. Sample size is large and the population standard deviation is given c. Sample size is large and the population standard deviation is given c. The test statistic is used in ANOVA. a. Z	
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USTM/COE/R-01

## $\left(\underline{\text{Descriptive}}\right)$

Tin	ne: 2 hr. 30 mins.	Marks: 50			
[Answer question no.1 & any four (4) from the rest]					
1.	Calculate mean, median, mode and CV of the following distribution: Class: 15-25 25-35 35-45 45-55 55-65 65-75 Frequency: 3 10 15 13 7 2	10			
2.	What is Research? Write the importance of data analysis in Research.	10			
3.	Enumerate the interpretations of the various values of the correlation coefficient. Given $\begin{array}{ccc} X & Y \end{array}$	5+5=10			
	Mean 12 7 Standard deviation 7 4 The correlation coefficient between X and Y is 0.85 Find the regression line of Y on X. Estimate Y when X = 14.5				
4.	Enumerate the principles of experimental design. Distinguish between Type-I error and Type-II error.				
5.	Explain probability sampling and non-probability sampling.	5+5=10			
6.	5. The following data give the yield on 12 plots of land of three samples under the three varieties of fertilizers A, B and C.				
	A: 25, 22, 24, 21 B: 17, 16, 16, 18 C: 24, 26, 30, 28 Test at 5% level of significance whether there is any significant difference in the average yields of land under three varieties of fertilizers. [Given, the critical value of the test statistic at 5% level of significance for (2, 9) df and (9, 2) df are respectively 4.26 and 19.38)				
7.	Two samples of sizes 10 and 15 are drawn from two populations of unknown variances. The variances of the two samples are 100 and 144. Test at 5% level of significance, whether the two variances are equal or not. [Given, the critical value of F at 5% level of significance with (9, 14) degree of freedom is 2.59 and with (14,9) degree of freedom is 3.04]	10			
8.	Write short notes on null hypothesis and alternative hypothesis. Write all the steps of testing of hypothesis.	5+5=10			

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