

**FIRST SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2022**

**(Regular/Improvement/Supplementary)**

**STATISTICS: COMPLEMENTARY COURSE FOR MATHEMATICS & CS**

**GSTA1C01T: INTRODUCTORY STATISTICS**

**Time: 2 Hours**

**Maximum Marks: 60**

**SECTION A: Answer the following questions. Each carries 2 marks.**

**(Ceiling 20 Marks)**

1. Distinguish between Census and sample method.
2. What is a frequency curve?
3. Distinguish between primary and secondary data.
4. The mean of a series is 10 and its coefficient of variation is 40 percent. Find the variance of the series.
5. What is meant by kurtosis? How do you measure kurtosis?
6. Given  $Q_1 = 59.46$ ,  $Q_3 = 65.46$ , median = 62.50. Calculate Bowley's coefficient of skewness.
7. The rank of 6 persons before and after attending course are as follows :

|               |   |   |   |   |   |   |
|---------------|---|---|---|---|---|---|
| Persons :     | A | B | C | D | E | F |
| Rank before : | 3 | 5 | 4 | 2 | 1 | 6 |
| Rank after :  | 4 | 6 | 5 | 2 | 1 | 3 |

Compute Spearman's Rank Correlation Coefficient.

8. Define principle of least squares.
9. If the covariance between X and Y is 488 and variance of X and Y are 400 and 625 respectively. Find out the coefficient of correlation.
10. State the relation between Laspeyre's, Paasche's and Bowley-Dorbish index number. Give the formula of each method.
11. Define time series. What are the components of time series?
12. Fit a trend line by the method of semi averages to the data given below.

|        |      |      |      |      |      |      |      |      |
|--------|------|------|------|------|------|------|------|------|
| Year:  | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
| Value: | 55   | 62   | 65   | 58   | 65   | 72   | 75   | 6    |

**(PTO)**

**SECTION B: Answer the following questions. Each carries 5 marks.  
(Ceiling 30 Marks)**

13. Draw a histogram for the following data:

|           |         |         |         |         |         |         |          |
|-----------|---------|---------|---------|---------|---------|---------|----------|
| Class     | 10 – 15 | 15 – 20 | 20 – 30 | 30 – 40 | 40 – 50 | 50 – 75 | 75 - 100 |
| Frequency | 4       | 12      | 20      | 18      | 14      | 25      | 10       |

14. What is meant by Questionnaire? How is it prepared?

15. Mean and SD of 100 items are calculated to be 80 and 20 respectively. Subsequently it is found that an item 70 has been wrongly entered as 85. Find the correct values of mean and SD.

16. Compute Pearson's coefficient of skewness from the following data.

|       |        |         |         |         |         |
|-------|--------|---------|---------|---------|---------|
| Class | 0 – 10 | 10 – 20 | 20 – 30 | 30 – 40 | 40 – 50 |
| f     | 3      | 5       | 9       | 21      | 2       |

17. Describe seasonal variation. Explain the method of obtaining seasonal indices by the method of simple averages.

18. What are the tests of a good index number? Explain.

19. Calculate Laspeyre's and Paasche's index number of prices for the following data :

| Commodity | 1998     |       | 1999     |       |
|-----------|----------|-------|----------|-------|
|           | Quantity | Price | Quantity | Price |
| A         | 15       | 40    | 20       | 35    |
| B         | 10       | 30    | 15       | 25    |
| C         | 7        | 15    | 7        | 20    |
| D         | 8        | 10    | 6        | 20    |
| E         | 2        | 25    | 1        | 40    |

**SECTION C: Answer any 1 question. Each carries 10 marks.**

20. Calculate GM and HM of the following data

|           |        |         |         |         |         |         |
|-----------|--------|---------|---------|---------|---------|---------|
| Classes   | 0 - 10 | 10 - 20 | 20 - 30 | 30 - 40 | 40 - 50 | 50 - 60 |
| Frequency | 8      | 12      | 20      | 5       | 3       | 2       |

21. From the data given below, find the regression equations.

|   |    |    |    |    |    |    |    |
|---|----|----|----|----|----|----|----|
| X | 42 | 44 | 58 | 55 | 89 | 98 | 66 |
| Y | 56 | 49 | 53 | 58 | 65 | 76 | 58 |

(i) Estimate Y when X = 40

(ii) Estimate X when Y = 90

(iii) Obtain Karl Pearson's correlation coefficient.

**(1 x 10 = 10 Marks)**