**PSG COLLEGE OF ARTS AND SCIENCE**
(AUTONOMOUS)

**BA DEGREE EXAMINATION MAY 2024**
(Third Semester)

Branch – **ECONOMICS**

**STATISTICAL METHODS – I**

Time: Three Hours Maximum: 50 Marks

**SECTION-A (5 Marks)**
Answer **ALL** questions
**ALL** questions carry **EQUAL** marks (5 x 1 = 5)

1. Which one is true example of primary data from the following options?
   a. Journal b. Book
   c. Census report d. Newspaper
2. The discrete variables and continuous variables are two types of _____
   a. Open end classification b. Time series classification
   c. Qualitative classification d. Quantitative classification
3. Find the measure of dispersion that can attain a negative value?
   a. Standard deviation b. Range
   c. Coefficient of dispersion d. Variance
4. The second moment about mean is equal to _____
   a. 0 b. 1
   c. Variance d. Standard deviation
5. Choose the correct example for positive correlation _____
   a. Weight and income b. Price and demand
   c. The repayment period and EMI d. Income and expenditure

**SECTION - B (15 Marks)**
Answer **ALL** Questions
**ALL** Questions Carry **EQUAL** Marks (5 x 3 = 15)

6. (a) State the limitations of statistics.

   (Or)

   (b) How the Interview schedule is effective in collecting primary data?

7. (a) Discuss different forms of classification in statistics.

   (Or)

   (b) The following data gives the number of children in 50 families construct a suitable frequency table:

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 4 | 2 | 0 | 2 | 3 | 2 | 2 | 1 | 0 | 2 |
| 3 | 5 | 1 | 1 | 4 | 2 | 1 | 3 | 4 | 2 |
| 6 | 1 | 2 | 2 | 2 | 1 | 3 | 4 | 1 | 0 |
| 2 | 4 | 3 | 0 | 1 | 3 | 6 | 1 | 0 | 1 |
| 1 | 3 | 4 | 1 | 0 | 1 | 2 | 2 | 2 | 5 |

8. (a) Find the arithmetic mean for the following frequency distribution:

| Class limits | 10 – 19 | 20 – 29 | 30 – 39 | 40 – 49 | 50 – 59 | 60 – 69 | 70 – 79 | 80 – 89 |
|---|---|---|---|---|---|---|---|---|
| Frequency | 5 | 9 | 14 | 20 | 25 | 15 | 8 | 4 |

(Or)

**Cont...**

(b) Calculate geometric mean and harmonic mean from the data given below:

| | | | | | | |
|---|---|---|---|---|---|---|
| 42 | 57 | 21 | 115 | 127 | 39 | 155 |

9. (a) Compute the first four central moments for the following data: 8, 10, 11, 12 and 14.

(Or)

(b) Pearson's coefficient of Skewness is – 0.7 and the value of the median and standard deviation are 12.8 and 6 respectively. Determine the value of the mean.

10. (a) Calculate the coefficient of correlation from the following data: $N = 10, \sum x^2 = 290, \sum x = 50, \sum y = -30, \sum y^2 = 300, \sum xy = -115.$

(Or)

(b) The marks obtained by the students in physics and mathematics are as follows:

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Marks in physics | 35 | 23 | 47 | 17 | 10 | 43 | 9 | 6 | 28 |
| Marks in maths | 30 | 33 | 45 | 23 | 8 | 49 | 12 | 4 | 31 |

## SECTION -C (30 Marks)

Answer **ALL** questions

**ALL** questions carry **EQUAL** Marks (5 x 6 = 30)

11. (a) Analyze important forms of non probability sampling techniques.

(Or)

(b) Enumerate the steps involved to design effective questionnaire.

12. (a) Narrate the essential characteristics of a good table.

(Or)

(b) Draw a Pie – diagram of the following data relating to areas under different food – crops:

| Food crops | Rice | Wheat | Barley | Jowar | Bajra | Maize | Others |
|---|---|---|---|---|---|---|---|
| Area in (000,000 acres) | 8 | 8 | 4 | 2 | 2 | 5 | 11 |

13. (a) From the following data, find out the mean and median.

| X | 55 | 54 | 52 | 53 | 56 | 58 | 52 | 50 | 51 | 49 |
|---|---|---|---|---|---|---|---|---|---|---|
| F | 108 | 107 | 105 | 105 | 106 | 107 | 104 | 103 | 104 | 101 |

(Or)

(b) Calculate standard deviation for the following data:

| Class interval | 5 – 10 | 10 – 15 | 15 – 20 | 20 – 25 | 25 – 30 | 30 – 35 | 35 – 40 | 40 – 45 |
|---|---|---|---|---|---|---|---|---|
| Frequency | 6 | 5 | 15 | 10 | 5 | 4 | 3 | 2 |

14. (a) Find the Bowley's coefficient of skewness for the following data:

| Weight (in kgs) more than | 40 | 50 | 60 | 70 | 80 | 90 |
|---|---|---|---|---|---|---|
| No. Of persons | 185 | 167 | 132 | 82 | 38 | 12 |

(Or)

(b) Find the Pearson's coefficient of skewness for the following frequency distribution.

| Annual sales (in '000 Rs.) | 0 – 20 | 20 – 40 | 40 – 60 | 60 – 80 | 80 – 100 | 100 – 120 |
|---|---|---|---|---|---|---|
| Number of items | 20 | 50 | 59 | 30 | 25 | 16 |

15. (a) Using the appropriate regression line find y when x = 64 from the following data:

| X | 65 | 66 | 67 | 67 | 69 | 71 | 72 | 70 | 65 |
|---|---|---|---|---|---|---|---|---|---|
| Y | 67 | 68 | 69 | 68 | 70 | 70 | 69 | 70 | 70 |

(Or)

(b) Find the coefficient of correlation for the following data:

| X | 35 | 40 | 60 | 79 | 83 | 95 |
|---|---|---|---|---|---|---|
| Y | 17 | 28 | 30 | 32 | 38 | 49 |

Z-Z-Z END