

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034



B.Sc. DEGREE EXAMINATION – STATISTICS

FIRST SEMESTER – NOVEMBER 2019

16/17/18UST1MC01 / ST 1502 / ST 1500 – STATISTICAL METHODS

Date: 30-10-2019

Dept. No.

Max. : 100 Marks

Time: 09:00-12:00

Section-A

Answer **ALL** the questions:

10 x 2 =20

1. Define statistics.
2. What is meant by tabulation?
3. Find the range and the coefficient of range for the following data 35,40,52,29,51,46,27,30,30,23.
4. Define kurtosis.
5. State the principle of least squares.
6. What are growth curves?
7. Define correlation.
8. Write down any two properties of regression coefficients.
9. Define class frequencies.
10. What is coefficient of colligation. .

Section-B

Answer any **FIVE** questions:

5 x 8 =40

11. Write short notes on scope of statistical methods.
12. The scores of two players A and B in 122 rounds are given below:

| | | | | | | | | | | | | |
|---|----|----|----|----|----|----|----|----|----|----|----|----|
| A | 74 | 75 | 78 | 72 | 78 | 77 | 79 | 81 | 79 | 76 | 72 | 71 |
| B | 87 | 84 | 80 | 88 | 89 | 85 | 86 | 82 | 82 | 79 | 86 | 80 |

Identify the more consistent player.

13. Fit a straight line trend to the data by the method of least squares:

| | | | | | | | |
|------------------------|------|------|------|------|------|------|------|
| Year | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
| Output (Rs. in crores) | 672 | 824 | 968 | 1205 | 1464 | 1758 | 2058 |

14. Find the regression line y on x.

| | | | | | | | | |
|---|---|---|----|----|----|----|----|--|
| x | 1 | 2 | 3 | 4 | 5 | 8 | 10 | |
| y | 9 | 8 | 10 | 12 | 14 | 16 | 15 | |

15. Examine the consistency of the following data:

$N=1000$, $(A) = 600$, $(B) =500$ $(AB) = 50$, the symbols having their usual meaning.

16. Discuss on characteristics of a good table.

17. Find the mean deviation about the mean for the following data:

| | | | | | |
|--------------|----|----|----|----|----|
| Value(x) | 10 | 11 | 12 | 13 | 14 |
| Frequency(f) | 3 | 12 | 18 | 12 | 3 |

18. Calculate coefficient of correlation from the following data:

| | | | | | | | | | | |
|---|----|----|----|----|----|----|-----|-----|----|-----|
| X | 84 | 85 | 62 | 48 | 84 | 95 | 103 | 100 | 85 | 115 |
| Y | 20 | 23 | 19 | 21 | 25 | 25 | 28 | 27 | 26 | 30 |

Section-C

Answer any **TWO** questions :

2 X 20 =40

19. Below is given the frequency distribution of marks in mathematics obtained by 100 students in a class.

| | | | | | | | | |
|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Marks | 20-29 | 30-39 | 40-49 | 50-59 | 60-69 | 70-79 | 80-89 | 90-99 |
| Number of students | 7 | 11 | 24 | 32 | 9 | 14 | 2 | 1 |

Draw both the Ogives, and use it to determine median.

20. Find Bowley's coefficient of skewness for the following data.

| | | | | | | |
|--------------------------|-----|-----|-----|----|----|----|
| Weight(in kgs) more than | 40 | 50 | 60 | 70 | 80 | 90 |
| Number of persons | 185 | 167 | 132 | 82 | 38 | 12 |

21. The profits y (Rs. lakhs) of a certain company in the x^{th} year of its life are given by :

| | | | | |
|---|------|------|------|------|
| x | 1 | 2 | 3 | 4 |
| y | 2.18 | 2.44 | 2.78 | 3.25 |

Fit a second degree parabola $y = a + bx + cx^2$ to the data.

22. Ten competitors in a beauty contest are ranked by three judges in the following order.

| | | | | | | | | | | |
|--------------|---|---|---|---|----|----|---|---|----|---|
| First judge | 1 | 4 | 6 | 3 | 2 | 9 | 7 | 8 | 10 | 5 |
| Second judge | 2 | 6 | 5 | 4 | 7 | 10 | 9 | 3 | 8 | 1 |
| Third judge | 3 | 7 | 4 | 5 | 10 | 8 | 9 | 2 | 6 | 1 |

Use the method of rank correlation coefficient to determine which pair of judges has the nearest approach to common taste in beauty.
