# LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

**B.B.A.** DEGREE EXAMINATION – **BUSINESS ADMINISTRATION**

FIRST SEMESTER – **NOVEMBER 2018**

**16/17/18UST1AL01 – INTRODUCTION TO STATISTICS**

Date: 31-10-2018         Dept. No.                    Max. : 100 Marks
Time: 09:00-12:00

## PART – A

**ANSWER ALL THE QUESTIONS**                                    (10 X 2 = 20)

1. Define Population and Sample.
2. Write a note on Misuse of Statistics.
3. What is frequency curve?
4. Find the median for the following data: 6, 9, 21, 5, 7, -2, 0, 32, 9
5. What do you mean by dispersion?
6. Write any two merits and demerits of Quartile deviation?
7. State the properties of Correlation Coefficient.
8. What are regression lines?
9. Define time series.
10. What are the various measures of trend?

## PART – B

**ANSWER ANY FIVE QUESTIONS**                                   (5 X 8 = 40)

11. Explain the limitations of Statistics?
12. Construct a Histogram and Frequency Polygon for the following frequency distribution:

| Marks: | 22 –28 | 29 – 35 | 36 – 42 | 43 – 49 | 50 – 56 | 57 – 63 | 64 – 70 |
|---|---|---|---|---|---|---|---|
| No. of students: | 2 | 3 | 10 | 18 | 15 | 5 | 6 |

13. Calculate Geometric mean and Harmonic mean for the following data:

| X | 20 | 21 | 22 | 23 | 24 | 25 |
|---|---|---|---|---|---|---|
| f | 4 | 2 | 7 | 1 | 3 | 1 |

14. Two samples of size 40 and 50 have the same mean 53, but different standard deviation 19 and 18 respectively. Find the standard deviation of the combined sample of size 90.

15. Calculate Spearman's Rank correlation co-efficient for the following data:

| X | 54 | 98 | 95 | 82 | 75 | 70 | 58 |
|---|---|---|---|---|---|---|---|
| Y | 47 | 26 | 33 | 37 | 30 | 39 | 41 |

16. In a correlation analysis, between production and price of a commodity, the following results were obtained.

|  | Production Index | Price Index |
|---|---|---|
| **Arithmetic Mean** | 110 | 98 |
| **Standard Deviation** | 12 | 5 |
| **Correlation coefficient** | -0.4 | |

Write down the regression equation of price on production and calculate the price index when the production index is 116.

17. From the following data, fit the straight line trend by the method of Semi-averages.

| Year | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| Profits (Rs. Lakhs) | 28 | 29.4 | 32 | 27 | 32.5 |

18. Explain the difference between primary and secondary data.

**PART – C**

**ANSWER ANY TWO QUESTIONS** (2 X 20 = 40)

19. a). Represent the following data by means of percentage subdivided bar diagrams:

| Cost per Unit | 2011 (Rs.) | 2012 (Rs.) | 2013(Rs.) |
|---|---|---|---|
| Raw materials | 2160 | 2600 | 2700 |
| Labour | 540 | 700 | 810 |
| Direct expenses | 360 | 300 | 350 |
| Factory expenses | 360 | 200 | 360 |
| Office expenses | 180 | 200 | 270 |

b). From the following data, calculate mean, median and mode:

| X | 50-53 | 53-56 | 56-59 | 59-62 | 62-65 | 65-68 | 68-71 | 71-74 | 74-77 |
|---|---|---|---|---|---|---|---|---|---|
| f | 3 | 8 | 14 | 30 | 36 | 28 | 16 | 10 | 5 |

20. Following are the marks obtained by two students A and B in 10 tests:

| Tests | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Marks obtained by A | 44 | 80 | 76 | 48 | 52 | 72 | 68 | 56 | 60 | 54 |
| Marks obtained by B | 48 | 75 | 54 | 60 | 63 | 69 | 72 | 51 | 57 | 66 |

If consistency of performance is the criterion for awarding a prize, which student should get the prize?

21. a). Calculate Pearson's coefficient of correlation from the following data:

| X | 43 | 44 | 46 | 40 | 44 | 42 | 45 | 42 | 38 | 40 | 42 | 57 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Y | 29 | 31 | 19 | 18 | 19 | 27 | 27 | 29 | 41 | 30 | 26 | 10 |

b). Find the two regression equations:

| Price Rs. | 10 | 12 | 13 | 12 | 16 | 15 |
|---|---|---|---|---|---|---|
| Quantity | 40 | 38 | 43 | 45 | 37 | 43 |

22. Find the seasonal variations by the ratio-to-trend method from the data given below:

| Year | Quarter I | Quarter II | Quarter III | Quarter IV |
|---|---|---|---|---|
| 1972 | 39 | 20 | 60 | 85 |
| 1973 | 45 | 23 | 62 | 90 |
| 1974 | 44 | 25 | 69 | 92 |
| 1975 | 53 | 30 | 70 | 97 |
| 1976 | 60 | 32 | 76 | 100 |

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