# B.Com. DEGREE EXAMINATION,APRIL 2020
## I Year I Semester
## Business Statistics and Operations Research-I

**Time : 3 Hours** **Max.marks :75**

### Section A $(10 \times 2 = 20)$ Marks

Answer any **TEN** questions

1. Define Pie Diagram.
2. What are the measures of dispersion?
3. Define Correlation.
4. List down the uses of time series.
5. Mention any two applications of Linear Programming.
6. What is Frequency Polygon?
7. State the uses of Mean.
8. What are the two regression lines?
9. What is Secular trend?
10. Define LPP.
11. Compute Range and Co-efficient of range from the following data.

| Marks | 10 | 20 | 30 | 40 | 50 |
|---|---|---|---|---|---|
| No. of Students | 4 | 8 | 12 | 5 | 4 |

12. State the seasonal variations.

### Section B $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

13. Distinguish between Classification and Tabulation.
14. Find out the median from the following data.

| Sl. No. | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Marks | 30 | 60 | 20 | 15 | 70 | 80 |

15. Calculate Karl- Pearson Co-efficient of Correlation from the following data.

| X | 65 | 66 | 67 | 67 | 68 | 69 | 71 | 73 |
|---|---|---|---|---|---|---|---|---|
| Y | 67 | 68 | 64 | 68 | 72 | 70 | 69 | 70 |

16. Find the 3 yearly moving averages from the following time series data.

| Year | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|
| Sales | 4 | 7 | 10 | 16 | 20 | 25 | 32 | 40 |

17. Given the Restrictions

    $x \geq 0, y \geq 0$
    $2x + y \leq 20$
    $x + 2y \leq 20$
    Indicate the feasible region on a graph and maximize the function x + 3y.

18. From the following data, calculate the value of y, when x =12

| | X | Y |
|---|---|---|
| Average | 7.6 | 14.8 |
| Standard Deviation | 3.6 | 2.5 |
| Correlation Co-efficient r | | 0.99 |

19. Calculate Mean Deviation and Co-efficient of M.D by using Mean from the following data.

| Class Interval | 0-3 | 3-6 | 6-9 | 9-12 | 12-15 | 15-18 | 18-21 |
|---|---|---|---|---|---|---|---|
| Frequency | 2 | 7 | 10 | 12 | 9 | 6 | 4 |

## **Section C** $(2 \times 15 = 30)$ Marks

Answer any **TWO** questions

20. The scores of two batsmen A and B in ten innings during a certain match are as under:

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| A | 16 | 14 | 28 | 31 | 35 | 40 | 5 | 30 | 48 | 7 |
| B | 9 | 15 | 24 | 26 | 34 | 45 | 5 | 31 | 20 | 40 |

    Find out which of the two batsmen is more consistent in scoring and who is better run-getter.

21. Find the Regression lines from the data.

| X | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Y | 11 | 20 | 17 | 25 | 27 |

22. Assuming that trend is absent, determine if there is any seasonality in the data given below:

| Year | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter |
|---|---|---|---|---|
| 2010 | 72 | 68 | 80 | 70 |
| 2011 | 76 | 70 | 82 | 74 |
| 2012 | 74 | 66 | 84 | 80 |
| 2013 | 76 | 74 | 84 | 78 |
| 2014 | 78 | 74 | 86 | 82 |

    What are the seasonal indices for various quarters?

23. Solve the following LPP by Graphical method.

Min $Z = 3X_1 + 2X_2$
$5X_1 + X_2 \geq 10$
Subject to $X_1 + X_2 \geq 6$
$X_1 + 4X_2 \geq 12$
$X_1 + X_2 \geq 0$