B.Com. DEGREE EXAMINATION,NOVEMBER 2018
I Year I Semester
Allied Paper I
BUSINESS STATISTICS AND OPERATIONS RESEARCH-I

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

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

Answer any **TEN** questions

1. What is Statistics?
2. Draw a multiple bar diagram from the following data:

Year	Sales (Rs.)(in thousands)	Gross profit(Rs.)(in thousands)	Net profit(Rs.)(in thousands)
2008	120	40	20
2009	135	45	30
2010	140	55	35

3. Mention any two importance of Diagrams.
4. What is Average?
5. What is Dispersion?
6. Define regression.
7. Explain time series.
8. Find out the range for the data:

5	40	23	68	90

9. Calculate Mean:

70	65	55	75	80	85	65	70	95

10. Find mode:

11	12	24	23	11	10	9	6	16	11	12	6	10

11. Fit a trend line to the following data by method of semi-averages.

Year	1997	1998	1999	2000	2001	2002
Profit	60	75	81	110	106	120

12. What is LPP?

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

Answer any **FIVE** questions

13. Explain the functions of statistics.

14. Find mean from the following frequency distribution:

Class interval:	15-25	25-35	35-45	45-55	55-65	65-75
Frequency:	4	11	19	14	0	2

15. Compute median for following data:

Class interval:	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency:	7	18	34	50	35	20	6

16. Calculate Pearson's rank correlation coefficient.

	1	2	3	4	5
Mathematics	85	60	73	40	90
statistics	93	75	65	50	80

17. From the following information calculate line of regression of Y on X:

	X	Y
Mean	40	60
Standard deviation	10	15
Correlation coefficient	0.7	

18. Calculate three yearly moving average to the following data

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Profit	15	18	17	20	23	25	29	33	36	40

19. A dietician wishes to mix two types of food in such a way that the vitamin contents of the mixture contains at least 8 units of vitamin A and 10 units of vitamin B. Food I contains 2 units per kg of vitamin A and 1 unit per kg of vitamin B while the food II contains 1 unit per kg of vitamin A and 2 units per kg of vitamin B . It costs Rs. 5 per kg to purchase food I and Rs. 8 per kg to purchase food II. Prepare a mathematical model of the problem stated above.

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

Answer any **TWO** questions

20. Solve the following linear programming model through graphical model.

    Objective Function:

    Maximize $2x_1 + 1.5x_2$

    Constraints:

    $2x_1 + 2x_2 \leq 16$

    $4x_1 + 2x_2 \leq 12$

    $4x_1 + 2x_2 \leq 28$

    $x_1, x_2 \geq 0$

21. Calculate standard deviation using actual mean method.

X	10	20	30	40	50	60
f	8	12	20	10	7	3

22. Find out the suitable coefficient of correlation for the following data:

X	15	18	20	24	30	35	40	50
Y	85	93	95	105	120	130	150	160

23. Compute average seasonal movement for the following series:

Year	Quarterly production			
	I	II	III	IV
2010	3.5	3.9	3.4	3.6
2011	3.5	4.1	3.7	4.0
2012	3.5	3.9	3.7	4.2
2013	4.0	4.6	3.8	4.5
2014	4.1	4.4	4.2	4.5