Roll.No. | **24UCCAT4004**

SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
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B.Com. CA - END SEMESTER EXAMINATIONS - NOVEMBER 2025
SEMESTER - IV
24UCCAT4004 - Business Statistics and Operations Research

Total Duration : 2 Hrs.30 Mins. Total Marks : 60

Section B

Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

1. Represent the following data by a pie diagram.

Item	Expenditure
Food	87
Clothing	24
Recreation	11
Education	13
Rent	25
Miscellaneous	20

2. Find Karl Pearsons coefficient of correlation from the following data:

Wages	Cost of living
100	98
101	99
102	99
102	97
100	95
99	92
97	95
98	94
96	90
95	91

3. Define Statistics. Give its characteristics.

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are respectively Rs.30 and Rs.20. Draw a suitable diagram to show the feasible region. Also, find the optimum allocation of units between A and B to maximum the total profits. Find the maximum profit.

4. Four jobs can be processed on four different machines, one job on one machine. Resulting times I minutes vary with assignments. They are given below.

		Machines			
		A	B	C	D
Jobs	I	42	35	28	21
	II	30	25	20	15
	III	30	25	20	15
	IV	24	20	16	12

Find the optimum assignment of jobs to machines and the corresponding time.

5. Calculate the median from the following table:

Marks	**Frequency**
10-25	6
25-40	20
40-55	44
55-70	26
70-85	3
85-100	1

6. Calculate the two regression equations of X on Y and Y on X from the data given below, taking deviations from actual means of X and Y. Estimate the likely demand when actual means of X and Y.

Price (Rs.)	**Demanded**
10	40
12	38
13	43
12	45
16	37
15	43

7. A dealer wishes to purchase a number of fans and sewing machines. He has only Rs.5,760 to invest and has space amount for 20 items. A fan costs him Rs.360 and a sewing machine Rs.240. His expectation is that he can sell a fan at a profit of Rs.22 and a sewing machine at a profit of Rs.18. Assuming that he can

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sell all the items that he can buy, how should he invest this money in order to maximum his profit? Formulate this problem as a linear programming problem and then use graphical method to solve it.

8. Discuss the Limitations of OR.

Section C

Answer any **THREE** questions $(3 \times 10 = 30$ Marks)

9. Explain the importance of statistics in business decision making.

10. Compute the standard deviation and mean deviation from the following data:

Class (x)	Frequency (y)
0-10	8
10-20	12
20-30	17
30-40	14
40-50	9
50-60	7
60-70	4

11. Ten competitions in a beauty contest are ranked by three judges in the following order: use rank correlation coefficient to discuss which pair of judges have the nearest approach to common tastes in beauty.

I Judge	II Judge	III Judge
1	4	6
5	8	7
4	7	8
8	6	1
9	5	5
6	9	10
10	10	9
7	3	2
3	2	3
2	1	4

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12. A company has two machines with which it can manufacture either bottles or tumblers. The first of the two machines has to be used for one minute and the second for two minutes in order to manufacture a bottle and the two machines have to be used for one minute each to manufacture a tumbler. During an hour the two machines can be operated for at the most 50 and 54 minutes respectively. Assuming that it can sell as many bottles and tumblers as it can produce, find how many bottles and tumblers it should manufacture so that its profit per hour is maximum, being given that it gets a profit of ten paise per bottle and six paise per tumbler.

13. Five lathers are to be allotted to five operators (one for each). The following table gives weekly output figures (in pieces):

	Weekly output in lathe					
Operators		L1	L2	L3	L4	L5
	P	20	22	27	32	36
	Q	19	23	29	34	40
	R	23	28	35	39	34
	S	21	24	31	37	42
	T	24	28	31	36	41

Profit per piece is Rs.25. Find the maximum profit per week.

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