SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai - 600 044.
B.Com - END SEMESTER EXAMINATIONS - NOV'2024
SEMESTER - I
20UCOAT1001 - Business Statistics and Operations Research-I

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 means of a pie diagram:

Item	Family A (Rs.)	Family B (Rs.)
Food	60	80
Clothing	40	50
Rent	30	60
Education	20	40
Fuel	10	20
Miscellaneous	20	30
Savings	30	20

2. Calculate the Karl Pearson's coefficient of correlation for the following data:

X	34	27	31	38	38	36	39	39	39	43
Y	9	8	11	15	15	16	15	10	13	12

3. Calculate trend values by the method of least squares and estimate the sales for 2017.

Year	2010	2011	2012	2013	2014	36	39	39	39	43
Sales (Rs.000)	70	74	80	86	90	16	15	10	13	12

4. Describe the procedure for the graphical solution to a linear programming problem.

5. Calculate the median marks for the following data set:

X	10	20	30	40	50
F	3	5	10	5	7

6. From the following ranks assigned to A and B, find rank correlation:

X	1	2	3	4	5	6	7	8	9	10
Y	10	8	7	9	6	2	4	3	5	1

7. Classify the various components of Time Series Analysis.

8. Solve L.P.P. by graphical method.
   Maximize $Z = 3x_1 + 4x_2$
   Subject to the constraints
   $4x_1 + 2x_2 < 80$
   $2x_1 + 5x_2 < 180$
   $x_1, x_2 > 0$.

Section C

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

9. Draw a Histogram and frequency polygon on the basis of the following data:

Marks	0-50	50-100	100-150	150-200	200-250	250-300
No. of Students	12	18	27	20	17	6

10. Calculate the coefficient of variation for the following data:

Size	0-10	10-20	20-30	30-40	40-50	250-300
No. of items	7	12	24	10	7	6

11. You are given the following:

X	87	84	88	102	101	84	72	84	83	98	97	100
Y	88	79	83	97	96	90	82	84	88	100	80	102

(i) Fit a line of regression of Y on X.
(ii) Suggest what the value of Y will be when X is expected to be 110.

12. Calculate average seasonal movement from the following data:

Year	I Q	II Q	III Q	IV Q
2019	72	68	80	70
2020	76	70	80	74
2021	74	66	84	80
2022	76	74	84	78
2023	78	74	86	82

13. Solve the following LPP by Graphical methods.
    Min $z = 3x_1 + 2x_2$
    $5x_1 + x_2 \geq 10$
    Subject to $x_1 + x_2 \geq 6$
    $x_1 + 4x_2 \geq 12$
    $x_1, x_2 \geq 0$

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