

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. ISM - END SEMESTER EXAMINATIONS - NOV'2024

SEMESTER - IV

20UBIAT4004 - Business Mathematics and Statistics -II

Total Duration : 2 Hrs.30 Mins.

Total Marks : 60

Section B

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

1. Write the products AB and BA of two matrices A and B where

$$A = [1,2,3,4] \text{ and } B = \begin{bmatrix} 1 \\ 2 \\ 3 \\ 4 \end{bmatrix}$$

2. Explain the term 'Index' and its uses.
3. Compute Laspeyre's and Paasche's indices for 1985 using the following data concerning three commodities.

Quantity (Kg)	Commodity		
	A	B	C
	15	5	10
	12	4	5
Price Per kg (Rs.)	15	20	4
	22	27	7

4. Describe briefly about components of Time Series.
5. $2x + 9y : 3x + 4y = 3 : 4$, Find the ratio of x to y.
6. Compute by the Simple AM method the index number for the year 1982 from the following data:

	1981	1982
Commodity	(PRICES IN RS.)	
Rice	35	40
Wheat	30	40
Pulses	25	35
Oil	15	25
Milk	40	50

Contd...

7. Compute price index number for 1945 by (a) Bowley's Method (b) Fisher's Method.

Commodity	1935		1945	
	Price (in Rs.)	Quantity	Price (in Rs.)	Quantity
A	4	50	10	40
B	3	10	9	2
C	2	5	4	2

8. From the following data, Ascertain the seasonal indices using the average method.

Year	1 st quarter	2 nd quarter	3 rd quarter
1974	72	68	80
1975	76	70	82
1976	74	66	84
1977	76	74	84
1978	78	74	86

Section C

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

9. Two square matrices of order 3 are given below:

$$A = \begin{bmatrix} -1 & 1 & 1 \\ 1 & -1 & 1 \\ 1 & 1 & -1 \end{bmatrix}$$

and

$$B = \begin{bmatrix} 0 & 1/2 & 1/2 \\ 1/2 & 0 & 1/2 \\ 1/2 & 1/2 & 0 \end{bmatrix}$$

Verify that one is the inverse of the other.

10. The monthly salaries of two persons are in the ratio 3:5. If each receives an increase of Rs.20 in the monthly salary the ratio is altered to 13:21. Prepare their salaries.
11. What point should be taken into account in the constructions of Index Numbers? Explain.

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12. Using the following data, Compute Fisher's Ideal Index and Show how it satisfies Factor Reversal Test and Time Reversal Test?

Commodity	Price in rupees per unit		Number of units	
	Base Year	Current Year	Base Year	Current Year
A	6	10	50	56
B	2	2	100	120
C	4	6	60	60
D	10	12	50	24
E	8	12	40	36

13. Using three year moving averages determine the trend values.

Year	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Production (000 tons)	21	22	23	25	24	22	25	26	27	26
