



Date: 05-05-2025

Dept. No.

Max. : 100 Marks

Time: 09:00 AM - 12:00 PM

SECTION A

Answer ANY FOUR of the following

4 x 10 = 40 Marks

1. a) What are the important characteristics of a good average?
b) Define measures of dispersion.
2. a) Calculate mean from the dataset: 12, 15, 18, 22, 26.
b) What are merits and demerits of the arithmetic mean.
3. What are the components of the Time Series? Explain.
4. Define LPP. Explain an extreme point of the linear programming problem.
5. Calculate mean, median and mode for the following data.

Family size	1 – 3	3 – 5	5 – 7	7 – 9	9 – 11
Number of families	7	8	2	2	1

6. Define Two-Person Zero-Sum Game. Explain Pure Strategy and Mixed Strategy.
7. Solve LPP.

$$\text{Minimize } Z = 20X_1 + 10X_2$$

$$\text{Subject to constraints } X_1 + 2X_2 \leq 40$$

$$3X_1 + X_2 \geq 30$$

$$4X_1 + 3X_2 \geq 60$$

$$X_1, X_2 \geq 0$$

8. Calculate the range, variance, and standard deviation of the data, -4, -2, 0, -2, 6, 4, 6, 0, -6, 4

SECTION B

Answer ANY THREE of the following

3 x 20 = 60 Marks

9. a) Find the coefficient of correlation between X and Y. (15)

X	45	55	56	58	60	65	68	70	75	80	85
Y	56	50	48	60	62	64	65	70	74	82	90

- b) Identify the mode in the following data set: [7, 7, 8, 10, 12, 8, 7]. (5)

10. a) Calculate mean deviation about the median for the following data.

X	12	15	16	19	14
f	5	4	9	6	7

b) Solve the game whose payoff matrix is given below:

Player B					
Player A		I	II	III	
	I	-2	15	-2	
	II	-5	-6	-4	
	III	-5	20	-8	

11. Fit a straight line by the method of least squares.

x_i	8	3	2	10	11	3	6	5	6	8
y_i	4	12	1	12	9	4	9	6	1	14

12. A company has four factories that supplies Goods to four warehouses. The Transportation cost (in Rs. Per unit), supply capacities and demand requirements are given below.

Factories	Warehouse				
	W	X	Y	Z	Supply
A	3	8	5	9	40
B	6	7	4	3	60
C	5	6	8	7	50
D	4	5	6	8	30
Demand	30	50	60	40	

Find an initial solution using (a) North-West corner method (b) Least cost method.

13. The table given below contains the activity label, its respective duration (in weeks), and its precedents. Draw critical path method to find the critical path and activities of this project.

Activity	Predecessor	Duration (in weeks)
A	-	6
B	A	4
C	A	3
D	B	4
E	C	3
F	C	10
G	D, E	3
H	F, G	2

14. Using 4-quarter moving average in respect of the following data, find (i) the trend (ii) short-term fluctuations and (iii) seasonal variations.

Year	1st quarter	2nd quarter	3rd quarter	4th quarter
1971	31	39	45	36
1972	42	44	57	45
1973	49	53	65	55
1974	47	51	62	50

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