



12.a) If  $A = \begin{bmatrix} 3 & 5 \\ 2 & a \end{bmatrix}$ ,  $B = \begin{bmatrix} 4 & b \\ 2 & 9 \end{bmatrix}$  and  $C = \begin{bmatrix} 26 & a \\ 14 & 45 \end{bmatrix}$  Determine a and b when  $2A + 5B = C$

(OR)

b) Compute the rank of  $\begin{bmatrix} 3 & 2 & -1 \\ 7 & 8 & 0 \\ 4 & 6 & 1 \end{bmatrix}$

13. a) Calculate the standard deviation of the following series.

No of students (in 00) below	2	6	10	14	18	22	26
No of colleges	0	7	19	42	61	72	80

(OR)

b) Find mean deviation for the following data

x	2	4	6	8	10
f	1	4	6	4	1

14.a) Calculate coefficient of correlation from the following data

X	12	9	8	10	11	13	7
Y	14	8	6	9	11	12	3

(OR)

b) Calculate the correlation coefficient between the height of father and son from the given data

Height of the father (in inches)	64	65	66	67	68	69	70
Height of son (in inches)	66	67	65	68	70	68	72

15.a) Calculate the cost of living index number from the following data

Item	Base year price	Current year price	Weight
Food	39	47	4
Fuel	8	12	1
Clothing	14	18	3
Housing rent	12	15	2
Miscellaneous	25	30	1

(OR)

b) Assume a four –yearly cycle calculate the trend by the method of moving averages from the following data relating to the production of tea in India.

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Production (in million lbs)	464	515	518	467	502	540	557	571	586	612

(CONTD .... 3)

## SECTION – C

(5 X 8 = 40 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K4 (Or) K5)

16. a) (i) The sum of three numbers in arithmetic progression is 24 and their product is 40.  
Calculate the numbers.

(ii) The sum of 3 numbers in G.P is 35 and their product is 1000. Find the numbers

(OR)

b). (i) A sum of money amounted to Rs 1240 in 8 months and Rs 1360 in 16 months. Calculate the rate of simple interest.

(ii) Mr. Ramesh deposited Rs 25,000 on 1.1.94. At the end of 5 months, he withdrew

Rs 5,000. Find the interest due to him on 31.12.94. Rate of interest=12% per annum

17.a) Test for consistency and solve, if consistent

$$4x+3y+2z+7=0; 2x+y-4z+1=0; x-7y-2=0$$

(OR)

b) Calculate the inverse of the matrix  $A = \begin{bmatrix} 1 & 3 & 0 \\ 0 & 4 & -6 \\ -1 & 5 & -7 \end{bmatrix}$

18. a) Point out the various characteristics of statistics

(OR)

b) Compute the mean deviation and standard deviation from the following data:

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

19.a) Ten competitors in a beauty contest are ranked by three judges in the following order

1st judge	1	6	5	10	3	2	4	9	7	8
2 <sup>nd</sup> judge	3	5	8	4	7	10	2	1	6	9
3 <sup>rd</sup> judge	6	4	9	8	1	2	3	10	5	7

Use the rank correlation coefficient to determine which pair of judges has the nearest approach to common tastes in beauty.

(OR)

b) Calculate the coefficient of correlation and obtain the lines of regression for the following

X	1	2	3	4	5	6	7	8	9
Y	9	8	10	12	11	13	14	16	15

Obtain an estimate of Y which should correspond to the average  $X=6.2$ .

20.a) Calculate trend values by the method of least square from the data given below and estimate the sales for 2010.

Year	2003	2004	2005	2006	2007
Sales of Co. A (Rs lakhs)	70	74	80	86	90

(OR)

b) Evaluate Laspeyre's, Paasche's and Fisher's index numbers:

Item	Price		Quantity	
	Base year	Current year	Base year	Current year
A	6	10	50	50
B	2	2	100	120
4	4	6	60	60
D	10	12	30	25