

[16]

SARDAR PATEL UNIVERSITY
F Y BBA - II Sem. Examination
Saturday, 11 April 2015
02.30 pm - 04.30 pm

UM02CBBF04 / UM02CBBB06 - Business Statistics

Total Marks: 60

Note: Graph paper will be provided on a request

Q.1 A. Write difference between primary and secondary data. Write methods of collecting primary data. [05]

B. Find mean, median and mode for the following data: [06]

Class	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99
f	3	4	12	33	69	92	50	25	11	1

C. Calculate S.D. and Coefficient of variation from data given below: [04]

Class	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40
f	14	26	32	45	39	12	9	2

OR

Q1 A. Define statistics. Discuss in brief the scope of statistics. [04]

B. In the frequency distribution of 100 families given below. [05]

Whose median is known to be 50. Find the missing frequency then find mode.

Expenditure	0-20	20-40	40-60	60-80	80-100
No. of families	14	?	27	?	15

C. Find Quartile Deviation, M.D. about mean, for the following distribution. [06]

Class	4-8	8-12	12-16	16-20	20-24	24-28	28-32	32-36	36-40
f	5	8	18	25	15	12	10	5	2

Q.2 A. Define LPP. Write applications of LPP. [04]

B. Solve the following LPP by graphical method. [06]

$$\text{Min } Z = x + y$$

$$\text{Sub. to } 5x + 10y \leq 50$$

$$x + y \geq 2$$

$$y \leq 4$$

$$x, y \geq 0$$

C. A firm manufactures three products A, B & C. The profits per unit are Rs. 3, Rs. 2 & Rs. 4 respectively. The firm has 2 machines G & H and given below is the required processing time for each machine on each product. [05]

Machine	Products		
	A	B	C
G	4	3	5
H	3	2	4

Machine G & H have 2000 & 2500 machine minutes respectively. The firm must manufacture 100 A's, 200 B's & 50 C's but not more than 150 A's. Formulate the above problem as LPP.

OR

Q.2 A. Discuss various scope of LPP. [03]

B. Solve the following Linear Programming problem by Graphical method. [06]

$$\text{Maximize } Z = 5x_1 + 7x_2$$

$$\text{Subject to } 4x_1 + 5x_2 \leq 200$$

$$3x_1 + 5x_2 \leq 180$$

$$2x_1 + 3x_2 \leq 165$$

$$x_1, x_2 \geq 0$$

C. Solve the following Linear Programming problem by graphical method. [06]

$$\text{Minimize } Z = 10x + 5y$$

$$\text{Subject to } 3x + 5y \leq 150$$

$$5x + 4y \geq 100$$

$$0 \leq x \leq 30$$

$$0 \leq y \leq 15$$

$$\text{where } x, y \geq 0$$

Q.3 A. What is Transportation Problem? Also derive the mathematical form of T.P. [05]

B. Solve the following Transportation Problem by VAM: [05]

	M ₁	M ₂	M ₃	M ₄	M ₅	Supply
F ₁	4	2	3	2	6	8
F ₂	5	4	5	2	1	12
F ₃	6	5	4	7	3	14
Demand	8	4	6	8	8	

C. Solve the following Assignment Problem to maximize the total profit (in Rs.): [05]

	D ₁	D ₂	D ₃	D ₄
O ₁	3	4	11	9
O ₂	5	7	8	9
O ₃	5	6	6	7
O ₄	4	6	8	8

OR

Q.3 A. Solve the following Transportation Problem by (i) North West Corner Method & (ii) Matrix Minima Method: [09]

	D ₁	D ₂	D ₃	D ₄	Supply
O ₁	42	48	38	37	140
O ₂	40	49	52	51	130
O ₃	39	38	40	43	170
Demand	80	90	110	160	

B. Solve the following minimal assignment problem:

[06]

		Job				
		1	2	3	4	5
Man	A	8	4	2	6	1
	B	0	9	5	5	4
	C	3	8	9	2	6
	D	4	3	1	0	3
	E	9	5	8	9	5

Q.4 A. Define Time Series. Explain components of Time Series Analysis.

[05]

B. Find Trend by 3 yearly moving averages. Also find short time variations.

[05]

Year	1981	1982	1983	1984	1985	1986
Prod.	111	113	115	114	116	118
Year	1987	1988	1989	1990	1991	1992
Prod.	111	125	127	132	140	143

C. Compute the seasonal index for the following data:

[05]

Year	Quarter			
	I	II	III	IV
1990	3.5	3.9	3.4	3.6
1991	3.5	4.1	3.7	4.8
1992	3.5	3.9	3.7	4.0
1993	4.0	4.6	3.8	4.5
1994	4.1	4.4	4.2	4.5
1995	4.2	4.6	4.3	4.7

OR

Q.4 A. What is analysis of time series? Write application of time series.

[05]

B. Calculate the trend values by the method of moving average, assuming a four yearly cycle from the following data:

Year	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
t	37.4	31.1	38.7	39.5	47.9	42.6	48.4	64.6	58.4	38.6

C. Compute seasonal indices applying simple average method for following data.

[05]

Year	Summer	Monsoon	Winter
1981	112	110	115
1982	80	145	90
1983	95	100	80
1984	110	90	110
1985	85	110	85

***** ALL THE BEST *****