[62] No. of printed pages: 3

SARDAR PATEL UNIVERSITY
BBA (FT) (II Sem.) Examination
Saturday, 23rd March 2013
3 - 5 pm
UM02CBBF04 - Business Statistics

Total Marks: 60

Note: Figures to the right indicate full marks.

Q.1

(a) What is Statistics? Write scope of Statistics. [05]

(b) Find mean, median, mode for the following freq. Distribution. [06]

Sr. No	1	2	3	4	5	6	7	8	9	10	11	12
X	54	56	70	79	89	138	150	220	273	290	300	340

(c) Calculate missing frequency from the following data. [04]
Arithmetic mean is 37.

Sr. No	0-10	10-20	20-30	30-40	40-50	50-60	60-70
f	4	7	12	?	22	11	3

OR

Q.1

(a) Write difference between Primary and Secondary data. [05]
Write methods of collecting primary data.

(b) Calculate Q_1, Q_3, D_3 and P_{85} from the following data [06]

x	7	21	28	35	42	49	56
f	4	5	6	10	3	7	2

(c) Calculate Std. Deviation 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
Freq.	14	26	32	45	39	12	9	2

Q.2

(a) What is Operation Research? Write characteristics of O.R. [03]

(b) Solve the following LPP by Graphical method. [06]

Maximise $z = 3x + 2y$

Such that $x + y \le 4$

$x - y \le 2$

where $x \ge 0,\ y \ge 0$

(c) Solve the following LPP by Graphical method [06]

Min $z = x + y$

Subject to

$5x + 10y \le 50$

$x + y \ge 2$

$y \le 4, \quad x, y \ge 0$

OR

Q.2

(a) What is LPP. Write applications of L.P.P. [03]

(b) A firm manufactures 3 products A, B and C. The profits per unit are Rs.3, Rs.2 and Rs.4 respectively. The firm has 2 machines G and H and given below is the required processing time for each machine on each product. [06]

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

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

(c) Solve the following by Graphical method. [06]

Minimise $z = 10x + 5y$

Subject to $3x + 5y \le 150$

$5x + 4y \ge 100$

$x \le 30$

$y \le 30, \quad x \ge 0, y \ge 0$

Q.3

(a) What is transportation problem? Explain by giving an example. [03]

(b) Obtain an initial basic feasible solution to the following using matrix minima method. [06]

	D	E	F	G	Supply
A	11	13	17	14	250
B	16	18	14	10	300
C	21	24	13	10	400
Demand	200	225	275	250	950

(c) Solve the following assignment problem to maximize the total profit (in Rs.) [06]

	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) What is Assignment Problem? Write mathematical from of Assignment problem. [03]

(b) Obtain the optimal basic feasible solution to the following Transportation Problem by Vogel's approximation method, [06]

	Warehouse				
	W_1	W_2	W_3	W_4	
F_1	19	30	50	10	7

Factory	F_2	70	30	40	60	9
	F_3	40	8	70	20	18
Requirement		5	8	7	14	34

(c) Solve the following Assignment problem by minimizing repair time [06]

	Job I	II	III	IV
A	42	40	51	67
B	57	42	63	58
C	49	52	48	61
D	41	45	60	55

Q.4

(a) What is analysis of time series? Write application of time series. [05]

(b) Find Trend by 5 yearly moving averages. Also find short time variations. [05]

Year	1961	1962	1963	1964	1965	1966	1967
Sale	200	194	181	178	202	247	258
Year	1968	1969	1970	1971	1972	1973	1974
Sale	218	196	201	203	191	189	203

(c) Find seasonal indices for the following Time Series: [05]

Year	Q_1	Q_2	Q_3	Q_4
2000	65	58	56	61
2001	68	63	63	67
2002	70	59	56	52
2003	60	53	51	58

OR

Q.4

(a) Explain in brief different components of Time Series. [05]

(b) Obtain Trend Line using 4 yearly moving average method and also estimate the value for year 1996. [05]

Year	1997	1998	1999	2000	2001	2002	2003	2004
Value	80	90	92	83	94	99	92	104

(c) Compute seasonal indices applying simple average method for following data. [05]

Year	Summer	Monsoon	Autumn	Winter
1981	112	110	120	115
1982	80	145	105	90
1983	95	100	140	80
1984	110	90	130	110
1985	85	110	110	85

*** * ***