(558-A-17) SEAT No._____ No. of Printed Pages : 3

SARDAR PATEL UNIVERSITY

MARCH - APRIL : 2018 EXAMINATION, BBA (ISM) SEMESTER : II
SATURDAY, 07/04/2018
EVENING SESSON TIME : 2.00 PM. TO 4.00 P.M.
SUBJECT CODE : UM02CBBS07
QUNATITATIVE TECHINQUES

TOTAL MARKS : 60

Q-1 (A) Write the meaning, assumption and limitations of linear programming problem. [07]

Q-1 (B) Solve the following LPP by graphical method. [08]

Minimize $Z = 10x + 5y$

s.t.

$3x + 5y \leq 150$

$5x + 4y \geq 100$

$0 \leq x \leq 30,\ 0 \leq y \leq 15$

OR

Q-1 (A) Define the terms : [03]

(1) Objective function (2) Feasible solution (3) constraints.

Q-1 (B) Solve the LPP by

(1) Simplex method [06]

(2) Graphical method [06]

Maximize $Z = 3x_1 + 2x_2$

s.t.

$x_1 + x_2 \leq 4$

$x_1 - x_2 \leq 2$

$x_1 \geq 0,\ x_2 \geq 0$

Q-2 (A) Solve the following transportation problem by [10]

(1) NWCM (2) VAM

	I	II	III	IV	Supply
A	15	10	17	18	2
B	16	13	12	13	6
C	12	17	20	11	7
Demand	3	3	4	5	

Q-2 (B) Solve the following assignment problem. [05]

	P	Q	R	S
A	12	15	18	8
B	13	10	9	14
C	10	12	15	13
D	7	8	9	14

(P.T.O.)

OR

Q-2 (A) Write the mathematical form of Transportation problem and assignment problem. [07]

Q-2 (B) Solve the following Transportation problem by [08]

(1) North West Corner Method
(2) Matrix Minima Method

	P	Q	R	S	Supply
A	19	30	50	10	50
B	70	30	40	60	90
C	40	8	70	20	60
Demand	3	3	4	5	

Q-3 (A) Solve the following game using graphical method. [05]

Player A	Player B: B_1	B_2
A_1	-6	7
A_2	4	-5
A_3	-1	-2
A_4	-2	5
A_5	7	-6

Q-3 (B) Solve the following game by dominance rule. [06]

Player A	Player B: B_1	B_2	B_3	B_4
A_1	3	2	4	0
A_2	3	4	2	4
A_3	4	2	4	0
A_4	0	4	0	8

Q-3 (C) Write the limitations of game theory. [04]

OR

Q-3 (A) Find optimum strategies for X and Y in the following game. [06]

Player X	Player Y: B_1	B_2	B_3	B_4	B_5
A_1	9	3	1	8	0
A_2	6	5	5	6	7
A_3	-2	4	3	3	8
A_4	5	6	2	2	1

Q-3 (B) Solve the following game graphically and find the value at game. [05]

Player A	Player B			
	B_1	B_2	B_3	B_4
A_1	2	2	3	-2
A_2	4	3	2	6

Q-3 (C) Write the meaning and types of game. [04]

Q-4 (A) Write the difference between (1) P Chart and np chart. (2) variable chart and attribute chart [07]

Q-4 (B) Draw $\overline{X}$ and R Chart for the following data and state you conclusions : [08]

Sample No.	1	2	3	4	5	6	7	8	9	10
$\overline{X}$	12.8	13.1	13.5	12.9	13.2	14.1	12.1	15.5	13.9	14.2
R	2.1	3.1	3.9	2.1	1.9	3.0	2.5	2.8	2.5	2.0

(for n=5, A_2=0.5777, D_3=0 D_4=2.115)

OR

Q-4 (A) From the pharmaceutical company samples of 400 bottles were taken daily for 15 days. The number of defective seals in these bottles are given below. Draw P-chart and state conclusions. [07]

Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Defective items	28	18	40	42	32	62	50	10	30	22	80	62	76	56	30

Q-4 (B) Write the uses of C-chart. [08]

The number of defects noticed in 20 cloth pieces are given below:

1, 4, 3, 2, 5, 4, 6, 7, 2, 3, 2, 5, 7, 6, 4, 5, 2, 1, 3, 8.

Using C-Chart decide whether the process is in a state of statistical control.

(3)