[67 / A-79]

SARDAR PATEL UNIVERSITY
MARCH - APRIL : 2016 EXAMINATION, BBA (ISM) SEMESTER : II
WEDNESDAY, 06/04/2016
EVENING SESSON TIME : 2.30 PM. TO 4.30 P.M.
SUBJECT CODE : UM02CBBS07
QUNATITATIVE TECHINQUES

TOTAL MARKS : 60

Q-1 (A) Solve the following LPP by graphical method. [07]

Minimize $Z = 10x + 5y$

s.t.

$3x + 5y \leq 150$

$5x + 4y \geq 100$

$x \leq 30, y \leq 15$

$x \geq 0, y \geq 0$

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

Maximize $Z = x_1 - x_2 + 3x_3$

s.t.

$x_1 + x_2 + x_3 \leq 10$

$2x_1 - x_2 \leq 2$

$2x_1 - 2x_2 + 3x_3 \leq 0$

$x_1 \geq 0, x_2 \geq 0, x_3 \geq 0$

OR

Q-1 (A) Write limitations of LPP. [03]

Q-1 (B) Solve the following LPP by graphical method. [06]

Maximize $Z = 6x + 7y$

s.t.

$2x + 4y \leq 48$

$4x + 2y \leq 60$

$x \geq 0, y \geq 0$

Q-1 (C) Solve the following LPP by simplex method. [06]

Maximize $Z = 3x_1 + 2x_2$

s.t.

$2x_1 + x_2 \leq 10$

$x_1 + 3x_2 \leq 6$

$X_1 \geq 0, x_2 \geq 0$

Q-2 (A) Solve the following Transportation problem by [10]
        (1) NWCM (2) VAM

	A	B	C	D	Supply
P	15	10	17	18	2
Q	16	13	12	13	6
R	12	17	20	11	7
Demand	3	3	4	5	

Q-2 (B) Solve the following Assignment Problem. [05]

	P	Q	R	S
X	0	7	14	21
Y	12	17	22	27
Z	12	17	22	27
W	18	22	26	30

OR

Q-2 (A) Write the mathematical form at assignment problem. [04]

Q-2 (B) Solve the following Assignment Problem. [06]

	A	B	C
P	10	7	8
Q	8	9	7
R	7	12	6
S	10	10	8

Q-2 (C) Solve the following Transportation problem by Matrix minima method. [05]

	A	B	C	Supply
X	6	8	4	14
Y	4	9	8	12
Z	1	2	6	5
Demand	6	10	15	

Q-3 (A) Write the limitations of Graph Theory. [04]

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Q-3 (B) Solve the following game by using 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) Solve the game given by [05]

Player A	Player B		
	B_1	B_2	B_3
A_1	1	3	1
A_2	0	-4	-3
A_3	1	5	-1

OR

Q-3 (A) Explain types of game. [04]

Q-3 (B) Use graphical method in solving the following game and find the value of the game. [06]

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) 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-4 (A) Give the difference between Charts of variables and charts of attributes. [05]

Q-4 (B) Draw P – Chart from the following information and draw your conclusions. [05]

Inspected Items	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
Defective Items	8	12	2	20	10	15	6	20	13	9	16	10	13	6	8

Q-4 (C) The number of defects in 20 cloth pieces are given below : [05]

1, 4, 3, 2, 5, 4, 6, 7, 2, 3, 2, 5, 7, 6, 4, 5, 2, 1, 3, 8. Decide whether the process is under control or not.

OR

Q-4 (A) Write the meaning and uses of Statistical Quality Control. [05]

Q-4 (B) From the factory producing piston rings sample of 200 rings are taken daily. The record of defective rings is given below. Draw np Chart and draw your conclusion. [05]

Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Defective Rings	18	10	20	20	26	20	26	12	15	17	31	34	32	13	10

Q-4 (C) Draw $\overline{X}$ and R charts for following information and draw your conclusion. [05]

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 = 0.577, D_3 = 0, D_4 = 2.11)

All the Best