PRN:		Course Code :	PBA104R

First Year MBA End Semester Examination Winter 2023

Decision Science

Day and Date: Monday, 18/12/2023 Max Marks: **50**

Time : 2-00 to 4-00 PM Duration: **02**hrs

Instructions:All questions are compulsory.

Q.1 **Attempt any two from the following**

		Marks	Bloom's Level	CLO
a)	Compare and Contrast frequency polygon and histogram	06	4	1
b)	Construct a frequency polygon and frequency curve without a histogram using the data given below.	06	4	1

Height (cms)	**Number of students**
140-150	74
150-160	163
160-170	135
170-180	28
Total	400

c)	Draw 'less than' and 'more than' ogive curves from the following data	06	4	1

Marks	**Frequency**
1-10	3
11-20	8
21-30	12
31-40	14
41-50	10
51-60	6
61-70	5
71-80	2

Q.2 **Attempt any two from the following**

a)	Rank the various measures of central tendency along with utility of each	06	5	2
b)	If the median of a distribution given below is 28.5, then find the value of x and y.	06	5	2

CI	**Frequency**
0-10	**5**
10-20	**X**
20-30	**20**
30-40	**15**
40-50	**Y**
50-60	**5**
Total	**60**

ESE

c) Using the actual mean method, calculate the standard deviation for the data 3, 2, 5, and 6. 06 5 2

Q.3 **Attempt the following**

a) A doctor wishes to mix two types of foods in such a way that the vitamin contents of the mixture contain at least 8 units of vitamin A and 10 units of vitamin C. Food 'I' contains 2 units/kg of vitamin A and 1 unit/kg of vitamin C. Food 'II' contains 1 unit/kg of vitamin A and 2 units/kg of vitamin C. It costs Rs 50 per kg to purchase Food 'I' and Rs 70 per kg to purchase Food 'II'. Formulate this problem as a linear programming problem to minimize the cost of such a mixture 06 5 3

b) Apply NWCM method to find IBFS for following transportation problem and improve IBFS to find optimal solution 07 5 3

Source	Destination					
	D_1	D_2	D_3	D_4	D_5	Capacity
S_1	5	1	8	7	5	15
S_2	3	9	6	7	8	25
S_3	4	2	7	6	5	42
S_4	7	11	10	4	9	35
Demand	30	20	15	10	20	22

or

b) A company has 4 machines on which to do 3 jobs. Each job can be assigned to one and only one machine. The cost of each job on each machine is given in the following table. Use Hungarian Assignment method to design appropriate assignment for scheduled tasks 07 5 3

Jobs	W	X	Y	Z
A	9	14	19	15
B	7	17	20	19
C	9	18	21	18
D	10	12	18	19
E	10	15	21	16

Q.4 **Attempt the following**

a) Compare and contrast the various sequencing rules 06 3 4

b) Use the principle of dominance to solve this problem. 07 6 4

Player A	PlayerB			
	I	II	III	IV
I	3	5	4	2
II	5	6	2	4
III	2	1	4	0
IV	3	3	5	2

or

b) There are five jobs, each of which has to be processed ontwo machines A and B in the order AB. Processing times are given in the following table. Use Johnson's Algorithm to design an optimum sequencing design. 07 6 4

Job	1	2	3	4	5
Machine A	6	2	10	4	11
Machine B	3	7	8	9	5

*****

ESE