

AR19

Code: 19MBA1006 **SET-2**
ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I MBA I Semester Regular & Supplementary Examinations, May-2022
QUANTITATIVE TECHNIQUES FOR BUSINESS DECISIONS

Time: 3 Hrs

Max. Marks: 60

Answer any Five questions
All questions carry EQUAL marks
Question No. 8 is Compulsory

1. The mean weight of 500 male students at a certain college is 151 lb and standard deviation is 15 lb. Assuming that the weights are normally distributed, find how many students weigh i) between 119.5 and 155.5 lb ii) more than 160 lb. **12M**
Values ($z=0$ & $z=2.10 = 0.4821$) and ($z=0$ & $z=0.30 = 0.1179$)
(area under right of $z=0$ is 0.5) and (area between $z=0$ & $z=0.60 = 0.2258$)

2. Solve the following linear programming problem by Simplex method. **12M**

$$\text{Max } Z = 3X_1 + 5X_2 + 4X_3$$

S.T.

$$2x_1 + 3x_2 \leq 8,$$

$$2x_2 + 3x_3 \leq 10$$

$$3x_1 + 2x_2 + 4x_3 \leq 15$$

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

3. Obtain an initial basic feasible solution to the following Transportation Problem using VAM method. **12M**

Destinations

SOURCE	A	B	C	D	E	SUPPLY
I	5	4	8	6	5	600
II	4	5	4	3	2	400
III	3	6	5	8	4	1000
DEMAND	450	400	200	250	300	2000

4. A Company has to assign four workers A,B,C,D to four jobs W,X,Y and Z respectively. The cost matrix is given below. Find the minimum cost of assigning the jobs. **12M**

Workers/Jobs	W	X	Y	Z
A	10	12	9	11
B	5	10	7	8
C	12	14	13	11
D	8	15	11	9

5. Explain the dominance principle in game theory using the following Problem and also find the value of game by graphical method. **12M**

Firm A	Firm B				
	I	B1	B2	B3	B4
	II	35	65	25	5
	III	35	0	15	0
	IV	45	50	0	10
	V	55	60	10	15

6. Telephone users arrive at a booth following a Poisson distribution with an average time of 5 minutes between one arrival and the next. The time taken for a telephone call is on an average 3 minutes and it follows an exponential distribution. What is the probability that the booth is busy? How many more booths should be established to reduce the waiting time to less than or equal to half of the present waiting time? **12M**

7. find correlation coefficient for the following data **12M**

X	39	65	62	90	82	75	25	98	36	78
Y	47	53	58	86	62	68	60	91	51	84

8. **CASE STUDY:**

1. Given below is the table that lists the jobs of network along with their time estimates. **12M**

Activity	to	tm	tp
1-2	1	1	7
1-3	1	4	7
1-4	2	2	8
2-5	1	1	1
3-5	2	5	14
4-6	2	5	8
5-6	3	6	15

- a) Draw the project network.
b) Find the expected duration and variance of the project length.
c) What is the probability that the project is completed in 13 weeks?