AR17

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I MBA I Semester Regular & Supplementary Examinations, December-2018
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. a) Find the Inverse of the matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ 3 & 4 & 5 \\ 4 & 5 & 6 \end{bmatrix}$ [6M]

   b) A manufacturer earns Rs. 4500 in the first month, Rs. 6000 in the second month. On plotting these points, the manufacturer observes a linear function may fit to the data. Determine the linear function that fits to the data and also estimate the profit for third and fourth months.   [6M]

2. a) Define Poisson distribution and find the mean and variance of poisson distribution.   [6M]

   b) Explain   [6M]
   - a. Standard Normal Variate
   - b. Normal probability curve
   - c. PDF of Normal Distribution

3. a) Find the Karl Pearson's Coefficient of Correlation for the following Data   [6M]

X	65	66	67	67	68	69	70	72
Y	67	68	65	68	72	72	69	71

   b) Explain   [6M]
   - a. Regression line of Y on X
   - b. Regression line of X on Y

4. Find the optimal solution of a transportation problem using VAM   [12M]

		Origin			Demand
		O1	O2	O3	
Destination	D1	6	4	1	50
	D2	3	8	7	40
	D3	4	4	2	60
Supply		40	75	35	

5. Solve the following LPP Using Graphical Method [12M]

$$Max\ Z = -150X_1 - 100X_2 + 28000$$

STC $\quad 20 \leq X_1 \leq 60$

$\quad\quad\quad 70 \leq X_2 \leq 140$

$\quad\quad\quad 120 \leq X_1 + X_2 \leq 140$

NNR $\quad X_1, X_2 \geq 0$

6. Solve the Following Game Whose Payoff Matrix is [12M]

		Player B				
		B_1	B_2	B_3	B_4	B_5
Player	A_1	3	0	6	-1	7
A	A_2	-1	5	-2	2	1

7. Solve the following LPP Using Simplex Method [12M]

$$Max\ Z = 4X_1 + 14X_2$$

STC $\quad 2X_1 + 7X_2 \leq 21$

$\quad\quad\quad 7X_1 + 2X_2 \leq 21$

NNR $\quad X_1, X_2 \geq 0$

8. CASE STUDY: [12M]
For the following Project

Activity	Preceding Activity	t_o	t_m	t_p
A	-	2	4	12
B	-	10	12	26
C	A	8	9	10
D	A	10	15	20
E	A	5	8	11
E	B, C	9	9	9
F	D	1	4	7
G	E, F, G	5	5	5

Then a) Draw the Network Diagram?

b) Obtain the critical path and project completion time?

c) Find the Mean and Variances for all Activities?

d) Find the Probability that the Project will be completed within 27 hours?