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Code: 19MBA1006

SET-I

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I MBA I Semester Regular & Supplementary Examinations, August-2021

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 What is Probability? Write about different probability Distributions and their uses. **12M**
- 2 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. 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 $z=0$ & $z=0.60 = 0.2258$) **12M**
- 3 Solve the following LPP by simplex method Maximize $Z = 4x_1 + 10x_2$ Subject to **12M**
constraints $2x_1 + x_2 \leq 50$, $2x_1 + 5x_2 \leq 100$, $2x_1 + 3x_2 \leq 90$,
 $x_1, x_2 \geq 0$
- 4 A Company has to assign five salesmen 1,2,3,4 and 5 to five centres A,B,C,D and E **12M**
respectively. The cost matrix is given below.
Find the optimum assigning of centres to salesmen to maximize profit..

salesmen / centres	A	B	C	D	E
1	32	38	40	28	40
2	40	24	28	21	36
3	41	27	33	30	37
4	22	38	41	36	36
5	29	33	40	35	39

- 5 Two competitors A and B are competing for the same product. Their different strategies are given in the following payoff matrix. Use dominance principle to find the optimal strategies. **12M**

		Company B			
		I	II	III	IV
Company A	I	3	2	4	0
	II	3	4	2	4
	III	4	2	4	0
	IV	0	4	0	8

- 6 A branch of Bank of Baroda has only one typist. Since the typist work varies in length (number of pages to be typed), the typing rate is randomly distributed as a poisson distribution with mean service rate of 8 letters/hour. The letters arrive at a rate of 5 per hour during the entire 8 hour workday. If the type work is valued at Rs.1.5 per hour, determine the following. **12M**
1. Equipment utilization.
 2. The percentage time that an arriving letter has to wait.
 3. Average system time
- Average cost due to waiting on the part of the typewriter.

- 7 Calculate the Spearman's coefficient Rank correlation for the following data **12M**

	1	2	3	4	5	6	7	8	9	10
X	58	43	50	19	26	27	75	34	28	67
Y	23	24	34	16	25	14	30	39	17	29

- 8 **CASE STUDY:** **12M**

A project schedule has the following characteristics:

Activity	1-2	1-3	2-4	3-4	3-5	4-9	5-6	5-7	6-8	7-8	8-10	9-10
Time (weeks)	4	1	1	1	6	5	4	8	1	2	5	7

- (i) Construct the network
- (ii) Compute E and L for each event, and
- (iii) Find the critical path.