Hall Ticket No: | | | | | | | | | | | Course Code: 14MBA11T06

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

MBA I Year I Semester (R14) Supplementary End Semester Examinations – JUNE 2019

QUANTITATIVE TECHNIQUES

Time: 3Hrs **Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either Part A or Part B only. Q.no 6 which is a case study is compulsory.

Q.1(A) i) Explain the concept of minima and maxima 10M

ii) Find the output, which maximizes the profit P given by the relationship

$P = 5000+1200Q - Q^2$

OR

Q.1(B) Solve the following system of equations 10M

x-2y+3z=1; 3x-y+4z=3; 2x+y-2z= -1.

Q.2(A) Find the mean and median for the following data 10M

Wages (in 000'Rs)	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Number of workers	5	10	20	28	8	18	15

OR

Q.2(B) Goals scored by two teams in football session were as follows. 10M

No.of goals Scored	0	1	2	3	4	5
Team-A	15	10	7	5	3	2
Team-B	20	10	5	4	2	1

Calculate Coefficient of variation and state which team is more consistent.

Q.3(A) Obtain the rank correlation coefficient between the variables X and Y from the following data 10M

X	50	55	65	50	55	60	50	65	70	75
Y	110	110	115	125	140	115	130	120	115	160

OR

Q.3(B) You are given the following information about advertising expenditure and sales: 10M

	Adv.Exp (X) (Rs.Lakhs)	**Sales (Y) (Rs.Lakhs)**
Mean	20	100
S.D	5	12
Correlation co-efficient (**r**) = 0.8		

(a) Construct the two regression equations

(b) Find likely sales when advertisement expenditure is Rs. 25 Lakhs?

What should be the advertisement expenditure if the company wants to attain the sales target of Rs. 130 lakhs.

Q.4(A) i. From a bag containing 10 black and 20 white balls, two balls are drawn at random from the bag. What is the probability that drawn balls are black? 10M

ii. One card is selected at random from a pack of playing cards. What is the probability that it is either a king or queen?

OR

Q.4(B) A random variable X has the following probability distribution: 10M

X	0	1	2	3	4	5	6	7
P(X)	0	K	2K	2K	3K	K	5K	K

Determine:
(i) K value (ii) P[X>4] (iii) Mean (iv) Variance
(v) Cumulative distribution function

Q.5(A) The average number of accidents in a factory per year is 1.5. Determine the probability that the number of accidents are 10M
i) At most one ii) At least one iii) Exactly 2.

OR

Q.5(B) A sample of 100 dry battery cells tested to find the length of life produced the following results: 10M
(μ) = 12 hours, standard deviation (σ) =3 hours. Assuming the data to be normally distributed how many number of batteries are expected to have life
(a) between 10 and 14 hours (b) more than 15 hours

Q.6 10M

Case Study (Compulsory)

The following table gives the number of good and bad parts produced by each of three shifts in a factory.

Shift	Good	Bad
Day	900	130
Evening	700	170
Night	400	200

Is there any association between the shift and quality of parts produced?

(Given for v = 2, $\chi^2_{0.05} = 5.991$)

END