

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**  
(UGC-AUTONOMOUS)  
MBA I Year I Semester (R18) Supplementary End Semester Examinations – MARCH 2022  
**BUSINESS STATISTICS FOR MANAGERS**

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) Find inverse of a matrix 10 M

$$A = \begin{bmatrix} 1 & 3 & 3 \\ 1 & 4 & 3 \\ 1 & 3 & 4 \end{bmatrix}$$

OR

Q.1(B) Find maxima and minima of the function  $y = x^3 - 3x^2 + 5$  10 MQ.2(A) The following distribution gives the pattern of overtime work done by 100 employees of a company. Calculate mean and median of the distribution 10 M

Overtime hours	10-15	15-20	20-25	25-30	30-35	35-40
Number of employees	11	20	35	20	8	6

OR

Q.2(B) Calculate Bowley's co-efficient of Skewness for the following data. 10 M

Profit (Rs.Crores)	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Number of companies	10	14	18	24	16	12	6

Q.3(A) Find rank correlation co-efficient for the following data 10 M

X	100	120	180	160	150	120	180	170
Y	300	350	450	440	350	480	470	350

OR

Q.3(B) Regression equations are  $8X - 10Y + 66 = 0$ ,  $40X - 18Y = 214$ ;  $\sigma_x^2 = 9$  what were the mean values of 'X' and 'Y'; the coefficient of correlation between X & Y, the value of  $\sigma_y$ . 10 MQ.4(A) A business man goes to hotels X, Y, Z, 20%, 50%, 30% of the time respectively. It is known that 5%, 4%, 8% of the rooms in X, Y, Z hotels have faulty plumbing. What is the probability that business man's room having faulty plumbing is assigned to (i) Hotel x (ii) Hotel Y (ii) Hotel Z 10 M

OR

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

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

Determine: i) K ii) Evaluate  $P(X < 6)$ ,  $P(0 < X < 5)$  and  $P(0 \leq X \leq 4)$

Q.5(A) Out of 800 families with 5 children each, how many would you expect to have 10 M

(i) 4 boys (ii) 3 girls (iii) either 2 or 3 boys (iv) 5 girls?

Assume equal probabilities for boys and girls.

**OR**

Q.5(B) The weekly wages of 1000 workers are normally distributed around a mean of Rs.750 10 M

an S.D of Rs. 50. Estimate the number of workers whose weekly wages will be

(i) between Rs 750 and Rs 780

(ii) between Rs.700 and Rs. 750

(iii) below 780

Q.6

**Case Study**

10 M

A market survey was conducted in four cities to find out the preference for brand soap. The responses are shown below:

	Calcutta	Delhi	Chennai	Bangalore
Yes	65	55	70	50
No	30	25	20	45
No opinion	5	20	10	5

- (i) What is the probability that a consumer prefers brand A soap?
- (ii) What is the probability that a consumer has no opinion about brand A soap?
- (iii) What is the probability that a consumer prefers brand A soap and from Chennai?
- (iv) What is the probability that a consumer prefers brand A soap given that he was from Bangalore?
- (v) What is the probability that a consumer has no opinion given that he was from Delhi?

**\*\*\*END\*\*\***