

Total No. of Questions : 5]

SEAT No. :

PC3248

[6383]-1005

[Total No. of Pages :3

M.C.A. - I (Management)

MT 11 : BUSINESS STATISTICS

(2024 Pattern) (Semester- I)

Time : 2½ Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) All questions are compulsory.
- 2) Use scientific (Non - programmable) calculator.
- 3) Figures to the right indicate full marks.

Q1) a) Solve any one: [5]

- i) Write a note on characteristics and functions of statistics.
- ii) Write a note on limitations of statistics.

b) Solve any one. [5]

- i) Use a double bar graph to illustrate the below information.

Class	9A	9B	9C	9D	9E
Number of students who score a distinction in science	11	11	15	12	20
Number of students who score a distinction in Mathematics	12	13	12	11	15

- ii) The table shows the distribution of ages of 100 people attending a school concert. The ages are given correct to the last birthday.

Age (Years)	0-20	20-40	40-60	60-80	80-100
Frequency	43	24	17	10	6

Construct a histogram to illustrate the data.

Q2) a) Solve any one: [5]

- i) From the following information on the number of defective components in 1,000 boxes.

Number of defective components	0	1	2	3	4	5
Number of Boxes	25	306	402	200	51	10

Calculate the arithmetic mean of defective components of the whole of the production line.

P.T.O.

- ii) The following distribution gives the pattern of overtime work per week done by 100 employee of a company. Calculate first quartile  $Q_1$ , seventh decile  $D_7$  and sixteenth percentile  $P_{60}$ .

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

- b) Solve any one. [5]

- i) Find out Standard Deviation for the following data.

Wage upto (Rs.)	10	20	30	40	50	60	70	80
Number of workers	12	30	65	107	157	202	222	230

- ii) Find mean Deviation about Median.

Consumption (Kilowatt hour)	0-10	10-20	20-30	30-40	40-50
No. of Users	6	25	36	20	13

- Q3) a)** Solve any one: [5]

- i) The probability that the two newly released films X and Y will succeed at the box - office are 0.6 and 0.7 respectively. What is the probability that,
- 1) Only X will succeed
  - 2) At least one will succeed.
- ii) A man tosses two fair coins. What is the conditional probability that he has tossed two heads given that he has tossed at least one head?

- b) Solve any one. [5]

- i) If 10% of bolts produced by a machine are defective, calculate the probability that out of a sample selected at random of 7 bolts, not more than one bolt will be defective.
- ii) In a Poisson distribution  $3P(X = 2) = P(X = 4)$ . Find the parameter 'm'.

**Q4) Solve any one:**

**[10]**

- a) Plot the scatter diagram for the following data and find the type of correlation. Also find Karl Pearson's correlation coefficient of the following data.

$X_i$	10	20	30	40	50	60	70	55	35
$Y_i$	60	58	40	35	30	25	34	32	45

- b) Find two regression equations for the following two series, what is most likely value of X when  $Y = 20$  and most likely value of Y when  $X = 22$ .

X:	35	25	29	31	27	24	33	36
Y:	23	27	26	21	24	20	29	30

**Q5) Solve any one:**

**[10]**

- a) What are the components of Time series. Find the trend using 4 years moving average.

Year:	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Production:	464	515	518	467	502	540	557	571	586	612

- b) Compute the seasonal averages, seasonal variations and seasonal indices for the following time series.

	2005	2006	2007
Jan.	15	23	25
Feb.	16	22	25
March	18	28	35
April	18	27	36
May	23	31	36
June	23	28	30
July	20	22	30
Aug.	28	28	34
Sept.	29	32	38
Oct.	33	37	47
Nov.	33	34	41
Dec.	38	44	53

