

MBA(D) (1st Semester) Examinations, June 2020 (CDOE)**[Session: Jan 2019-Dec 2020]****Subject: Business Statistics****Paper: MBD-105****Time: 3 Hours****Full Marks: 80****The figures in the margin indicate full marks.***Candidates are required to give their answers in their own words as far as practicable.***Group - A****Answer any six questions.****5×6=30**

- The mean of 5 observations is 4.4 and the variance is 8.24. If three of the five observations are 1, 2 and 6, find the values of the other two.
- Find the median of the following distribution:

Gross profit as % of sales:	0-10	10-20	20-30	30-40	40-50
Number of companies:	22	38	46	35	20
- Prove that the correlation coefficient varies between +1 and -1.

- From the following table, find the missing values and calculate the coefficient of correlation by Karl Pearson's method:

X:	6	2	10	4	?
Y:	9	11	?	8	7

Arithmetic means of X and Y series are 6 and 8 respectively.

- State the properties of linear regression.
- From the following probability distribution find the value of K and determine E(x).

x	1.5	3.0	4.5	6.0	7.5
p	0.1	K	0.3	0.2	0.1

- In a certain blade producing factory there is a small chance of 1/500 for any blade to be defective. The produced blades are supplied in packets of 5. Use Poisson distribution to calculate the approximate number of packets containing (i) no defective and (ii) one defective blade respectively in a consignment of 5,000 packets.
- List out the characteristics of index numbers.

Group -B**Answer any five questions.****10×5=50**

- From the prices X and Y of shares A and B respectively given below, state which share is more stable in value.

Price of Share A (X):	55	54	52	53	56	58	52	50	51	49
Price of Share B (Y):	108	107	105	105	106	107	104	103	104	101

Please Turn Over

10. A computer while calculating the correlation coefficient between two variables x and y from 25 pairs of observations obtained the following results:

$$x = 5, y = 4, \sigma_x^2 = 1, \sigma_y^2 = 2.4, \text{ and } r_{xy} = 8/\sqrt{1500}$$

It was, however, discovered at the time of checking that two pairs of observations were not correctly copied. They were taken as (6,14) and (8,6) while the correct values were (8, 12) and (6, 8). Calculate the correct value of the correlation coefficient.

11. From the data given below, find:

1. The two regression equations.
2. The coefficient of correlation between marks in economics and statistics.
3. The most likely marks in statistics when marks in economics are 30.

Marks in Economics:	25	28	35	32	31	36	29	38	34	32
Marks in Statistics:	43	46	49	41	36	32	31	30	33	39

12. What is an index number? State the uses and limitations of index number.
13. (a) Distinguish between point estimation and interval estimation.
 (b) Explain the concept of maximum likelihood estimator (mle). State the properties of mle.
14. Describe the different criteria for a good estimator.
15. (a) Define 'hypothesis'. What do you understand by testing of hypothesis?
 (b) Distinguish between:
 - (i) Null hypothesis and Alternative hypothesis
 - (ii) Acceptance region and Critical region