Printed Page:- 04 **Subject Code:- AMIBA0203**

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

MBA (Integrated)

SEM: II - THEORY EXAMINATION (2023- 2024)

Subject: Introduction to Business Statistics

Time: 2.5 Hours **Max. Marks: 60**

General Instructions:

IMP: *Verify that you have received the question paper with the correct course, code, branch etc.*

1. *This Question paper comprises of* **three Sections -A, B, & C.** *It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.*

2. *Maximum marks for each question are indicated on right -hand side of each question.*

3. *Illustrate your answers with neat sketches wherever necessary.*

4. *Assume suitable data if necessary.*

5. *Preferably, write the answers in sequential order.*

6. *No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.*

SECTION A **15**

1. Attempt all parts:-

1-a. The mode of the given data: 4, 6, 5, 9, 3, 2, 7, 7, 6, 5, 4, 9, 10, 10, 3, 4, 7, 6, 9, 9 is (CO1) 1

(a) 7

(b) 9

(c) 10

(d) 6

1-b. In a correlation analysis, if r = 0, then we may say that there is ..... between variables. (CO2) 1

(a) No correlation

(b) Linear correlation

(c) Perfect correlation

(d) None of these

1-c. Probability of sure event is (CO3) 1

(a) 1

(b) 0

(c) ½

(d) 1/3

1-d. If X has a Poisson Distribution with P[X=0]=P[X=1], What is V[X] (CO4) 1

(a) 0

(b) 1

(c) 2

(d) None of these

1-e. Consider a hypothesis H_0 where μ = 5 against H_1 where μ > 5. The test is? (CO5) 1

(a) Right tailed

(b) Left tailed

(c) Center tailed

(d) Cross tailed

2. Attempt all parts:-

2.a. Write any two the demerits of range?.(CO1) 2

2.b. Prove that Correlation coefficient is the geometric mean between the regression coefficients. (CO2) 2

2.c. An unbiased die is tossed. Find the probability of getting a multiple of 3.(CO3) 2

2.d. Calculate is the mean of the $B\left(4, \frac{1}{3}\right)$ binomial distribution. (CO4) 2

2.e. Write a short note on Null hypothesis.(CO5) 2

SECTION B **15**

3. Answer any <u>three</u> of the following:-

3-a. Draw a histogram for the following data distribution:(CO1) 5

Height (in cm)	40-45	45-50	50-55	55-60	60-65
Number of Boys	12	18	15	9	8

3-b. Find the coefficient of correlation between the values of x and y (CO2) 5

x	1	2	3	4	5	6
y	18	20	25	7	8	10

3.c. Define mutually exclusive events. and also explain the conditional probability. (CO3) 5

3.d. Out of 960 families with 5 children each find the expected number of families with (CO4) 5

(i) At least one boy

(ii) At most 3 boys

Assuming equal Probabilities for boy and girl.

3.e. A random sample of size 16 has 53 as mean. The sum of squares of the deviation from mean is 135. Can this sample be regarded as taken from the population having 56 as mean?. Given that the tabular value for 15 degree of freedom is 2.13 at 5% LOS ($t_{0.05,15} = 2.13$).(CO5) 5

SECTION C **30**

4. Answer any <u>one</u> of the following:-

4-a. Define deciles. Give the formulas for computing (i) D_5, (ii) D_7 (iii) D_9. (CO1) 6

4-b. Calculate the mode from the following frequency distribution (CO1) 6

Sales in crores	0-4	4-8	8-12	12-16	16-20	20-24
No. of firms	4	6	12	7	6	3

5. Answer any <u>one</u> of the following:-

5-a. Find rank correlation coefficient from following data.(CO2) 6

x	40	64	61	90	82	72	25	98	36	78
y	48	52	57	85	62	67	60	90	51	83

5-b. Obtain the line of regression x on y for the following data: (CO2) 6

X	1	3	5	7	9
Y	15	18	21	23	22

Estimate the value of X at Y=9.

6. Answer any <u>one</u> of the following:-

6-a. The probability of A, B, C solving a problem are 1/3, 2/7, and 3/8 respectively. If all three try to solve the problem simultaneously, find the probability that exactly one of them will solve it.(CO3) 6

6-b. The probability that a man will be alive for another 25 years is 3/5, and the probability that his wife will be alive for another 25 year is 2/3. Find the probability that: (CO3) 6

i. Both will be alive

ii. Only wife will be alive

iii. Only man will be alive

7. Answer any <u>one</u> of the following:-

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7-a. If X is binomial variate with E(X) = 5 and variance 4. what are the parameters of the distribution and also Calculate P(x <2). (CO4) 6

7-b. If X follows a Poisson distribution such that P(X = 2) = 9P(X=4)+90P(X=6), Find the mean and variance of X. (CO4) 6

8. Answer any <u>one</u> of the following:-

8-a. A group of 5 patients treated with the medicine A weigh 42, 39, 48, 60 and 41 Kg. A second group of 7 patients from the same hospital treated with medicine B weigh 38, 42, 56, 64, 68, 69 and 62Kg. Do you agree that the claim that medicine B increases the weight significantly? It is given that the tabular value of test statistics at 10% LOS for 10 d.f. is 1.81.(CO5) 6

8-b. A random sample of 900 members has a mean 3.4cms. Can it be reasonably regarded as a sample from a large population of mean 3.2 cms and S.D. 2.3 cms? Given, the significant value of z at 5% level of significance is 1.96. (CO5) 6