Printed Page:- 03 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 Quartile deviation with $Q_1 = 25$ and $Q_3 = 75$ is (CO1) 1

(a) 50

(b) 15

(c) 25

(d) 20

1-b. Regression coefficient of line y on x : $8x - 10y + 66 = 0$ is ..... (CO2) 1

(a) -8/10

(b) 8/10

(c) 10/8

(d) -10/8

1-c. If A and B are mutually exclusive events, then $P(A \cap B)$ equals (CO3) 1

(a) 1

(b) 1/2

(c) 0

(d) None of these

1-d. For a Poisson Distribution, if mean(m)=1 , then P(1) is... (CO4) 1

(a) 1/e

(b) e

(c) e/2

(d) Indeterminate

1-e. The standard error of difference of means of two large random samples of sizes n_1 and n_2 from the population of variance σ^2 is:(CO5) 1

(a) $\sqrt{\frac{1}{n_1}+\frac{1}{n_2}}$

(b) $\sigma\sqrt{\frac{1}{n_1}+\frac{1}{n_2}}$

(c) $\sqrt{\frac{1}{n_1}-\frac{1}{n_2}}$

(d) $\sqrt{n_1+n_2}$

2. Attempt all parts:-

2.a. Calculate range from the following data (CO1) 2

100, 150, 200, 300, 550, 600.

2.b. Write down the formulae for regression coefficients.(CO2) 2

2.c. Define Probability. (CO3) 2

2.d. For a binomial distribution n=10, q=0.4, then find out the mean. (CO4) 2

2.e. Write down the test statistic for single mean of small sample.(CO5) 2

SECTION-B 15

3. Answer any three of the following:-

3-a. Calculate Arithmetic mean from the following data:(CO1) 5

Wages	10-20	20-30	30-40	40-50	50-60
No. of workers	25	34	40	29	22

3-b. Find rank correlation coefficient from following data.(CO2) 5

Advertise cost	40	64	61	90	82	72	25	98	36	78
Sales	48	52	57	85	62	67	60	90	51	83

3.c. Write short Notes on (CO3) 5

I. Sample Space
II. Outcomes
III. Equally Likely events

3.d. The experience shows that 4 accidents occur in a plant on an average per month. Calculate the probabilities of less than 3 accidents in a certain month. Use Poisson distribution. (Given $e^{-4}=0.01832$). (CO4) 5

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. (CO5) 5

SECTION-C 30

4. Answer any one of the following:-

4-a. Discuss the advantages and disadvantages of using a histogram compared to a bar graph for displaying frequency distributions. (CO1) 6

4-b. Calculate median from the following data-(CO1) 6

Income in Rs	0-10	10-20	20-30	30-40	40-50	50-60
No. of persons	3	6	8	10	8	5

5. Answer any one of the following:-

5-a. For certain data, $3X + 2Y - 26 = 0$ and $6X + Y - 31 = 0$ are the two regression equations. Find the values of means and coefficient of correlation.(CO2) 6

5-b. Calculate Karl Pearson coefficient of correlation from the following data.(CO2) 6

X	18	20	21	22	27	27	28	29	29	29
Y	23	37	29	28	28	31	35	30	36	33

6. Answer any one of the following:-

6-a. An urn contains 10 white and 3 black balls, while another urn contains 3 white and 5 black balls. Two balls are drawn from the first urn and put into the second urn and then a ball is drawn from the latter. What is the probability that it is a white ball? (CO3) 6

6-b. A can hit a target 4 times in 5 shots; B 3 times in 4 shots; C twice in 3 shots. They fire a volley. What is the probability that at least two shots hit?(CO3) 6

7. Answer any one of the following:-

7-a. If the mean and variance of a binomial variate X are 8 and 4 respectively, then find P(X<3). (CO4) 6

7-b. If X is a Poisson variate with P(X=0)=P(X=1), then find P(X=2). (CO4) 6

8. Answer any one of the following:-

8-a. The height of 6 randomly chosen sailors in inches are 63, 65, 68, 69, 71 and 72. Those of 9 randomly chosen soldiers are 61, 62, 65, 66, 69, 70, 71, 72 and 73. Test whether the sailors are on the average taller than soldiers. If the tabulated value is 1.77 at 5% level of significance.(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 3.2cms and S.D. 2.3cms?Tabulated value at 5% level of significance is 1.96. (CO5) 6