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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA
(An Autonomous Institute Affiliated to AKTU, Lucknow)

MBA (Integrated)

SEM: II - THEORY EXAMINATION (2025 - 2026)

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:-

- (1.1) Among the following that is not a measure of central tendency is: (CO1, K1) 1
- Standard deviation
 - Mean
 - Median
 - Mode
- (1.2) If b_{xy} and b_{yx} are two regression coefficients, they have: (CO2, K1) 1
- Same signs
 - Opposite signs
 - No necessary condition
 - None of These
- (1.3) In a box there are 8 red and 7 blue and 6 green balls. One ball is picked up, the probability that is neither red nor green (CO3, K1) 1
- $1/3$
 - $3/4$
 - $2/3$
 - $8/21$
- (1.4) If 'p', 'q' and 'n' are probability pf success, failure and number of trials respectively in a Binomial Distribution. The Standard Deviation (S.D) of this distribution is (CO4, K3) 1
- $\sqrt{np}$
 - $\sqrt{pq}$

(c) $(np)^2$

(d) $\sqrt{npq}$

(1.5) Degrees of freedom in F-test are: (CO5, K1)

1

(a) Two values

(b) Single value

(c) Three values

(d) Infinite

2. Attempt all parts:-

(2.1) Write the formula that shows the relationship between mean, median, and mode. (CO1, K1)

2

(2.2) If $r = 1$ and $r = -1$, elaborate the nature of correlation coefficient. (CO2, K2)

2

(2.3) Find the probability that a card selected at random from a deck is an ace or a queen. (CO3, K2)

2

(2.4) State the assumptions of Poisson distribution. (CO4, K2)

2

(2.5) Define null hypothesis and alternate hypothesis. (CO5, K1)

2

SECTION-B

15

3. Answer any three of the following:-

(3.1) The following data represents the number of books read by students in a month. Draw a frequency polygon and a histogram: (CO1, K3)

5

Number of books	Frequency
0-2	4
2-4	6
4-6	8
6-8	5
8-10	2

(3.2) Explain the correlation analysis. Discuss the types of correlation. (CO2, K2)

5

(3.3) Define conditional probability. If $P(A \cap B) = 0.25$ and $P(B) = 0.5$, evaluate $P(A|B)$. (CO3, K3)

5

(3.4) The average number of typing errors per page is 1.5. Find the following:

5

(i) Probability of no errors

(ii) Probability of at least one error. (CO4, K3)

(3.5) Explain the principles of sampling with suitable examples. (CO5, K2)

5

SECTION-C

30

4. Answer any one of the following:-

(4.1) Calculate Median and Mode for the following data. (CO1, K3)

6

C.I.	0-20	20-40	40-60	60-80	80-100
Freq.	4	8	10	6	2

(4.2) Describe the scope of statistics in various fields. (CO1, K2)

6

5. Answer any one of the following:-

(5.1) Calculate the regression equation of x on y from the following data: (CO2, K3)

6

X	5	4	10	4	8
Y	8	9	5	8	7

(5.2) From the following table, calculate the correlation coefficient: (CO2, K3) 6

X	15	12	20	16	18	20	26
Y	10	15	11	11	25	18	30

6. Answer any one of the following:-

(6.1) Two cards are drawn at random from a pack of 52 cards. Calculate the probability that either both are black or both are queen. (CO3,K3) 6

(6.2) Prove that (CO3, K3) 6

(I). Statement: Probability of the impossible event is zero, i.e. $P(\emptyset) = 0$

(II). Statement: Probability of the Complementary Event

$\bar{A}$ if $\bar{A}$ is given by $P(\bar{A}) = 1 - P(A)$

7. Answer any one of the following:-

(7.1) The mean and variance of the binomial variate X are 8 and 4, respectively. Find $P(X < 2)$. (CO4, K3) 6

(7.2) Write down the probability mass function, mean, variance, standard deviation, and recurrence relation formula of Poisson Distribution. (CO4,K2) 6

8. Answer any one of the following:-

(8.1) 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,K3) 6

(8.2) A sample of 64 observations has mean 48. Test the claim that population mean is 50, given $\sigma = 10$ at 5% level of significance. Also, calculate the 95% confidence limits. (CO5, K3) 6