|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Roll No |  |  |  |  |  |  |  |  |  |  |  |  |

 ****

**Presidency University**

**Bengaluru**

 **SCHOOL OF LAW**

**MAKE UP EXAMINATION – SEPTEMBER 2023**

**Course Code**: BBL 301

**Course Name**: Quantitative Techniques

**Program**: BAL/BBL/BCL

**Date**: 30/SEP/2023

**Time**: 9.30AM – 12.30PM

**Max Marks**: 100

**Weightage**: 50%

 **Instructions:**

1. *Read the all questions carefully and answer accordingly.*
2. *Do not write any matter on the question paper other than roll number.*

**Part A [Memory Recall Questions]**

**Answer all the Questions. Each question carries TEN marks. (4Qx 10M= 40M)**

1. Calculate the inverse of the following matrices: (C.O.No.01) [Comprehension]
2. $A= \left[\begin{matrix}2&-2&3\\1&0&-3\\3&4&0\end{matrix}\right]$
3. $A= \left[\begin{matrix}1&4&3\\4&2&1\\3&2&2\end{matrix}\right]$
4. What are Simultaneous Equations? Mention the three methods for solving the Simultaneous Equations. Consider the system of equations:

$$x+y=4$$

$$2x-3y=9$$

Calculate the value of x and y by using all the three methods. (C.O.No.02) [Comprehension]

1. Define the term statistics. Explain the various techniques used for data collection using suitable examples. (C.O.No.02) [Knowledge]
2. What is sampling? Elaborate on the various types of sampling techniques with the help of appropriate examples. (C.O.No.02) [Knowledge]

**Part B [Thought Provoking Questions]**

**Answer all the Questions. Each question carries TEN marks. (4Qx10M=40M)**

1. a. Calculate arithmetic mean from the following data: (Using assume mean method)

|  |  |
| --- | --- |
| **X** | **Frequency** |
| Less than 10 | 5 |
| Less than 20 | 15 |
| Less than 30 | 55 |
| Less than 40 | 75 |
| Less than 50 | 100 |

b. Calculate mode of the following series

|  |  |
| --- | --- |
| **Class** | **Frequency** |
| 10-19 | 10 |
| 20-29 | 12 |
| 30-39 | 18 |
| 40-49 | 30 |
| 50-59 | 16 |
| 60-69 | 6 |
| 70-79 | 8 |

(C.O.No.03) [Application]

1. a. 48 students were asked to write the total number of hours per week they spent on watching television. With this information find the standard deviation of hours spent for watching television.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **x** | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| **f** | 3 | 6 | 9 | 13 | 8 | 5 | 4 |

b. Marks of the students in a particular subject of a class are given below.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Marks** | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 |
| **No. of Students** | 8 | 12 | 17 | 14 | 9 | 7 | 4 |

Find its standard deviation. (C.O.No.04) [Application]

1. Find the value of the correlation coefficient from the following table:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Age (x)** | 43 | 21 | 25 | 42 | 57 | 59 |
| **Glucose Level (y)** | 99 | 65 | 79 | 75 | 87 | 81 |

(C.O.No.04) [Application]

1. Find linear regression equation for the following two sets of data:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **X** | 2 | 4 | 6 | 8 |
| **Y** | 3 | 7 | 5 | 10 |

(C.O.No.04) [Application]

**Part C [Problem Solving Questions]**

**Answer all the Questions. Each question carries TEN marks. (2Qx10M=20M)**

1. Attempt all the questions.
2. A coin is thrown 3 times, what is the probability that atleast one head is obtained?
3. Find the probability of getting a numbered card when a card is drawn from the pack of 52 cards.
4. There are 5 green 7 red balls. Two balls are selected one by one without replacement. Find the probability that first is green and second is red.
5. What is the probability of getting a sum of 7 when two dice are thrown?
6. Three dice are rolled together. What is the probability as getting at least one '4'?

(C.O.No.04) [Application]

1. a. Three persons A, B and C have applied for a job in a private company. The chance of their selections is in the ratio 1 : 2 : 4. The probabilities that A, B and C can introduce changes to improve the profits of the company are 0.8, 0.5 and 0.3, respectively. If the change does not take place, find the probability that it is due to the appointment of C.

b. A bag contains 4 balls. Two balls are drawn at random without replacement and are found to be blue. What is the probability that all balls in the bag are blue?