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# PRESIDENCY UNIVERSITY BENGALURU

**SCHOOL OF MANAGEMENT**

**MAKE-UP EXAMINATION - SEP 2023**

**Course Code :** MBA1007

**Course Name :** Sem I - MBA1007 - Business Statistics

**Program :** MBA

**Date :** 03-OCT-2023

**Time :** 1.00PM – 4.00PM

## Max Marks : 100

**Weightage : 50**%

**Instructions:**

### Read all questions carefully and answer accordingly.

1. *Question paper consists of 3 parts.*
2. *Scientific and non-programmable calculator are permitted.*
3. *Do not write any information on the question paper other than Roll Number.*

#### Part A (Memory Recall Questions)

**Answer all the Questions. Each Question Carries Three Marks. 10Q x 3M=30M**

1. Compute range and coefficient of range for the following data: 20 45 36 75 18 51 74.

(CO1) [Knowledge]

1. Mention the merits of median
2. Mention the merits of standard deviation
3. Write a short note on correlation.
4. What is a sample space? Give an example.
5. What are equally likely events? Give an example.
6. Briefly explain the concept of random variable.
7. Define binomial distribution. Give an example of binomial random variable.
8. Write the test statistic for testing single mean when variance is known.
9. What are type I and Type II errors?

(CO1) [Knowledge] (CO1) [Knowledge] (CO2) [Knowledge] (CO2) [Knowledge] (CO2) [Knowledge] (CO3) [Knowledge] (CO3) [Knowledge] (CO4) [Knowledge] (CO4) [Knowledge]

#### Part B (Thought Provoking Questions)

**Answer all the Questions. Each Question Carries Eight Marks. 5Q x 8M =40M**

1. The following data represent the number of appointments made per 15-minute interval by telephone solicitation for a lawn-care company. Assume these are population data. Compute mean and median.

#### Number of Frequency

**Appointments of Occurrence**

0–1 31

1–2 57

2–3 26

3–4 14

4–5 6

5–6 3

(CO1) [Comprehension]

1. A national study by Harris Interactive, Inc., evaluated the top technology companies and their reputations. The following shows how 10 technology companies ranked in reputation and how the companies ranked in percentage of respondents who said they would purchase the company’s stock. A positive rank correlation is anticipated because it seems reasonable to expect that a company with a higher reputation would have the more desirable stock to purchase. Compute the rank correlation coefficient between reputation and stock purchase.

|  |  |
| --- | --- |
| **Company Reputation**  Microsoft 1 | **Stock Purchase**  3 |
| Intel 2 | 4 |
| Dell 3 | 1 |
| Lucent 4 | 2 |
| Texas Instruments 5 | 9 |
| Cisco Systems 6 | 5 |
| Hewlett-Packard 7 | 10 |
| IBM 8 | 6 |
| Motorola 9 | 7 |
| Yahoo 10 | 8 |

(CO2) [Comprehension]

1. According to survey research conducted by the Com QUEST division of BBM Bureau of Measurement in Toronto, the probability a viewer will remember a cinema advertisement is 0.74. Compute the probability that of the 10 viewers of the cinema advertisement,
   1. exactly 0 can recall the advertisement.
   2. all 10 can recall the advertisement.

(CO3) [Comprehension]

1. For borrowers with good credit scores, the mean debt for revolving and instalment accounts is $15,015 (*BusinessWeek,* March 20, 2016). Assume the standard deviation is $3540 and that debt amounts are normally distributed.
   1. What is the probability that the debt for a borrower with good credit is more than $18,000?
   2. What is the probability that the debt for a borrower with good credit is less than $10,000?

(CO3) [Comprehension]

1. A study by Hewitt Associates showed that 79% of companies offer employees flexible scheduling. Suppose a researcher believes that in accounting firms this figure is lower. The researcher randomly selects 415 accounting firms and through interviews determines that 303 of these firms have flexible scheduling. With a 1% level of significance, does the test show enough evidence to conclude that a significantly lower proportion of accounting firms offer employees flexible scheduling?

(CO4) [Comprehension]

#### Part C (Problem Solving Questions)

**Answer all the Questions. Each Question Carries Fifteen Marks. 2Q x 15M=30M**

1. Is it possible to predict the annual number of business bankruptcies by the number of firm births (business starts) in the United States? The following data published by the U.S. Small Business Administration, Office of Advocacy, are pairs of the number of business bankruptcies (1000s) and the number of firm births (10,000s) for a six-year period. Use these data to develop the equation of the regression model to predict the number of business bankruptcies by the number of firm births. Is it possible to predict the annual number of business bankruptcies by the number of firm births (business starts) in the United States? The following data published by the U.S. Small Business Administration, Office of Advocacy, are pairs of the number of business bankruptcies (1000s) and the number of firm births (10,000s) for a six-year period. Use these data to develop the equation of the regression model to predict the number of business bankruptcies by the number of firm births.

|  |  |
| --- | --- |
| **Business Bankruptcies (Y)** | **Firm Births (X)** |
| **(1000)** | **(10,000)** |
| 34.3 | 58.1 |
| 35.0 | 55.4 |
| 38.5 | 57.0 |
| 40.1 | 58.5 |
| 35.5 | 57.4 |
| 37.9 | 58.0 |

(CO1) [Application]

1. A bank branch located in a commercial district of a city had the business objective of improving the process for serving customers during the noon-to-1:00 P.M. lunch period. The waiting time (defined as the time the customer enters the line until he or she reaches the teller window) of all customers during this hour is recorded over a period of a week. Data were collected from a random sample of 15 customers, and the results are organized (and stored in) as follows: 4.2, 5.55, 3.02, 5.13, 4.77, 2.34, 3.54, 3.20, 4.50, 6.10, 0.38, 5.12, 6.46, 6.19, 3.79 At the 0.05 level of significance, is there evidence that the population mean waiting time is less than 5 minutes? (table value is - 1.761)

(CO3) [Application]