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# MODEL EXAMINATION – NOVEMBER 2024

## COMMERCE – III SEMESTER B.COM (NEP)

## PAPER 3.2.1: BUSINESS MATHEMATICS AND STATISTICS

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

**Instruction:** *Answers should be written completely in English*

### SECTION – A

**1**. Answer any **SIX** questions. Each question carries **TWO** marks each. (6X2=12)

a. Solve for x, $4x^2 + 4 = 20$.
b. Define linear equation.
c. If Variance = 1369, find the Standard Deviation?
d. If bxy = -0.36, byx = -1.38 obtain r?
e. $\bar{x} = 20.2$, Med = 22.1 find Z.
f. Find the coefficient of variation if the variance is 16, number of items is 20 and sum of the items is 160.
g. What is positive correlation.
h. Give any four requisites of a good average.

### SECTION – B

Answer any **THREE** questions. Each question carries **FOUR** marks each. (3X4=12)

2. Calculate Standard Deviation from the following data:

| Age | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 |
|---|---|---|---|---|---|---|
| Frequency | 5 | 12 | 33 | 20 | 10 | 8 |

3. Solve the following simultaneous equations by using the elimination method:
x + 2y = 42
5x – y = 12

4. You are given the following data:
Calculate the regression line X on Y and also calculate X when Y = 88

| **Variables** | **X** | **Y** |
|---|---|---|
| Mean | 47 | 96 |
| Variance | 64 | 81 |
| Correlation co-efficient between X and Y | 0.36 | |

5. Calculate Karl Pearson's co-efficient of correlation for the following data.

| Marks in accounts(x) | 50 | 60 | 58 | 47 | 49 | 33 | 65 | 43 |
|---|---|---|---|---|---|---|---|---|
| Marks in Maths (y) | 48 | 65 | 60 | 48 | 55 | 58 | 63 | 48 |

6. Simplify $\frac{x-1}{14} + \frac{x-2}{21} = \frac{x-3}{7}$

## SECTION – C

Answer any **THREE** questions. Each question carries **TWELVE** marks each. (3X12=36)

7. a) Solve the following simultaneous equation by using substitution method.

$5x + 2y = 23$

$3x - y = 5$

b) $\frac{3x-1}{2} + \frac{x+2}{3} = \frac{9x+12}{5} - 2$

Find the value of 'x'.

8. Calculate the arithmetic mean and median.

| Less than | 10 | 20 | 30 | 40 | 50 |
|---|---|---|---|---|---|
| Frequency | 4 | 16 | 40 | 76 | 90 |

9. Find the mode from the following data by grouping and analysis table.

| Marks | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 |
|---|---|---|---|---|---|---|---|
| No. of students | 2 | 5 | 10 | 12 | 13 | 4 | 3 |

10. The following are the runs scored by two batsman A and B in ten innings.

| A | 101 | 0 | 27 | 82 | 36 | 45 | 13 | 7 | 65 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|
| B | 97 | 40 | 12 | 13 | 96 | 8 | 8 | 85 | 56 | 15 |

a) Who is the better run getter?

b) Who is more consistent batsman?

11. Calculate rank correlation co-efficient from the following data.

| X | 70 | 80 | 68 | 78 | 68 | 65 | 82 | 65 |
|---|---|---|---|---|---|---|---|---|
| Y | 13 | 15 | 12 | 13 | 13 | 13 | 16 | 10 |