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SUBJECT CODE NO: B-2145
FACULTY OF SCIENCE AND TECHNOLOGY
B.Sc. Pattern - 2013 (T.Y SEM V)
Examination November / December 2025
Mathematics MAT-503 OR 1) Mathematical Statistics - I

[Time: 1:30 Hours]

[Max. Marks: 50]

Please check whether you have got the right question paper

N. B

- 1) All questions are compulsory.
- 2) The figure to the right indicates full marks.

Q1 (A) Attempt any one

- a) Explain "Histogram" with a suitable example. 08
- b) State and prove the formula for the combined mean by considering the two series 08

(B) Attempt any one

- c) Find the median of the following frequency distribution: 07

Class interval	0-10	10-20	20-30	30-40	40-50
Frequency	14	25	27	24	15

- d) Find the mean and variance of the first twenty natural numbers 07

Q2 (A) Attempt any one

- a) Find the relation between root mean square deviation and standard deviation. 08
- b) Explain measures of dispersion with a suitable example. 08

(B) Attempt any one

- c) Calculate the standard deviation of the set of number 3,4,9,11,13,6,8,10 07
- d) The probability that a boy will pass an examination is $\frac{3}{5}$ and that for a girl is $\frac{2}{5}$, 07
 what is the probability that at least one of the them passes an examination

Q3 (A) Attempt any one

- a) Define 05
 - 1) Range
 - 2) Mean deviation
 - 3) Quartile deviation
 - 4) Standard deviation
 - 5) Coefficient of variation
- b) Prove that if A and B are independent event then $\bar{A}$ and $\bar{B}$ are also independent event. 05

(B) Attempt any one

- c) For two observation x_1, x_2 prove that: $G^2 = A.H$ **05**
 Where A is arithmetic's means H is harmonic mean and G is geometric mean.
- d) A distribution consists of three components with frequencies 200,250,300 **05**
 having means 25,10 and 15 respectively. Find the mean of the combined distribution

Q4 Choose the correct alternatives of the following**10**

1. The variance of the six number 4,4,5,5,6,6 is ____
 a) $\frac{1}{2}$ b) $\frac{1}{3}$ c) $\frac{3}{5}$ d) $\frac{2}{3}$
2. The square of the standard is called as ____ deviation
 a) Variance b) Mean deviation c) Moment d) Range
3. The probability that a card drawn at random from the pack of playing cards may be either a queen or ace is ____
 a) $\frac{1}{13}$ b) $\frac{2}{13}$ c) $\frac{3}{13}$ d) $\frac{4}{13}$
4. The algebraic sum of the deviation of all the variable values from their arithmetic means is ____
 a) Zero b) Minimum c) Infinity d) 2
5. Which of the following is a continuous variable?
 a) The number of children in a family
 b) Weight
 c) The number of students in a class
 d) The number of workers in a firm