Total No. of Printed Pages:2

SUBJECT CODE NO:- B-2114
FACULTY OF SCIENCE & TECHNOLOGY
B.Sc. T.Y (Sem-V)
Examination November/December- 2022
Mathematics MAT–503
Mathematical Statistics – I

[Time: 1:30 Hours] **[Max. Marks: 50]**

Please check whether you have got the right question paper.

N.B i) all questions are compulsory.
ii) figures to the right indicate full marks.

Q. 1 A) Attempt any one:

a) Explain frequency polygon with suitable example. 8
b) Explain measures of Dispersion with suitable example. 8

B) Attempt any one:

c) Find the mode for the following frequency distribution: 7

Wages in Rs.	0-10	10-20	20-30	30-40	40-50
Number of workers	22	38	46	35	20

d) Find the harmonic mean of the marks obtained by 25 students in a class test of the following. 7

Marks obtained	11	12	13	14	15
No. of students	3	7	8	5	2

Q. 2 A) Attempt any one

a) Show that the mean square deviation about any point A is greater than Variable. 8
b) State and prove the addition law of probability. 8

B) Attempt any one:

c) Calculate the first three moments about 90 from the following: 7

X:	82	88	90	91	92	95	97
F:	7	11	15	8	4	3	2

7

d) Four person are chosen at random from a group containing 3 men, 2 women and 4 children. Show that the chance that exactly two of them will be children is $\frac{10}{20}$

Q. 3 A) Attempt any one :

a) Show that for any discrete distribution the standard deviation is not less than the mean deviation from mean. 5

b) Define continuous random variable. State the conditions under which a function is called probability density function. 5

B) Attempt any one:

c) The arithmetic mean of three sets are 25, 10 and 15 whose corresponding number of observations are 200,250 and 300. Find the combined arithmetic mean. 5

d) Calculate the first and second moments about zero for the observations 5,7,11,15,17,20. 5

Q.4 Choose the correct alternative of the following: 10

i) If A and B are disjoint events with P(A)=0.7 and P(B)=0.5 then $P(A \cup B)$is equat to _____

a) 0.12 b) 12 c) 0.35 d) 1.2

ii) The coefficient of variation when standard deviation=2 and mean = 40 is _____

a) 5 b) 10 c) 42 d) 4

iii) The skewness when mean =10 and median =12 and standard deviation =9 is ____

a) 2 b) -2 c) 3 d) 0

iv) Which of the following is a discrete variable.

a) Temperature b) height,

c) The number of children in a family. d) weight

v) if $f(x) = k.x.e^{-x}, (0 \leq x \leq \infty)$ be a continuous distribution then the value of constant K is

a) 2 b) 5 c) 4 d) 1