

- (b) Out of 6 teachers and 8 students, a committee of 11 is to be formed. In how many ways can this be done ? If the committee contains at least 4 teachers.

(Or)

7. (a) Probability that a boy will pass an examination is $\frac{2}{3}$ and that for a girl is $\frac{3}{5}$. What is the probability that at least one of them passes.

- (b) If $1 \leq r \leq n$, prove that :

$$C(n, r) + C(n, r + 1) = C(n + 1, r + 1)$$

(Or)

8. During an examination of equal length the following number of defects was observed :

2, 3, 4, 5, 5, 1, 6, 7, 3, 3, 2

Draw control chart for the number of defects (c- chart) and give your comments.

(Or)

9. The data shows the sample mean and range for 10 samples for size 5 each. Find the control limits for mean chart and range chart.

Sample No.	1	2	3	4	5	6	7	8	9	10
Mean ($\bar{X}$)	10.2	11.8	10.8	11	9.6	10.4	11.6	9	10.6	10
Range (R)	7	4	8	5	7	4	8	4	7	9

Assume for $n = 5$, $A_2 = 0.58$, $D_3 = 0$ and $D_4 = 2.115$.

♦♦♦♦

Roll No.

Paper Code – BCA 305 (N)

BCA 2nd Year (Semester-III) EXAMINATION, 2023-24

ELEMENTS OF STATISTICS

Paper - V

Time : Two Hours]

[Maximum Marks : 75

Note- This paper consists of three Section A, B and C. Carefully read the instructions of each Section in solving the question paper. Candidates have to write their answers in the given answer-copy only. No separate answer-copy (B Copy) will be provided.

Section-A

(Short Answer Type Questions)

Note- All questions are compulsory. Answer the following questions as short answer type questions. Each question carries 5 marks.

- (A) Write the objects of classification ?

(B) Write a short note on scope of statistics ?

(C) The mean marks of 50 students in section A is 60 and mean marks of 40 students in section B is 50. find the combined mean of 90 students in both the section.

(Or)

3. Calculate mean, median and mode from the following table :

Class	100-200	200-300	300-400	400-500	500-600
Frequency	15	15	33	20	17

(Or)

4. Calculate interquartile range, Quartile Deviation and coefficient of quartile deviation from the following data :

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of Students	5	8	7	12	28	20	10	10

(Or)

5. Calculate Standard deviation and coefficient of variation from the following data :

Age in Years	20-30	30-40	40-50	50-60	60-70	70-80	80-90
Members	6	12	15	28	20	14	5

Section-C

(Long Answer Type Questions)

- Note-** This section contains four questions from which **one** question is to be answered as long question. Each question carries 15 marks.

6. (a) Explain the following with example.
(i) Mutually Exclusive events
(ii) Conditional Probability

- (D) Find the harmonic mean of 12, 8, 6 and 24.
(E) Find the range and its coefficient for the following data:

11, 11, 15, 7, 8, 10, 6.5, 7, 8, 4

- (F) Find the number of Permutations of the letters of the word 'TUESDAY'. How many of these begin with T and end with E.

- (G) Find n, if :

$$(n + 1)! = 12 \times (n - 1)!$$

- (H) A bag contains 6 red 5 white and 4 black balls. Two balls are drawn at random. Find the probability that none of them is red.

- (I) What are the advantages of Statistical Quality Control ?

Section-B

(Long Answer Type Questions)

- Note-** This section contains four questions from which **one** question is to be answered as long question. Each question carries 15 marks.

2. Find less than and 'More Than' cumulative frequencies and draw 'Ogives' from the following data :

X	10-19	20-29	30-39	40-49	50-59	60-69	70-79
F	3	9	8	13	9	5	4