Roll No. .....

Paper Code – BCA 3005

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

ELEMENTS OF STATISTICS

PAPER-V

K-028

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.

9. The data shows the sample mean and range for 10 samples for size 5 each. Draw mean chart, range chart and comment on the state of control of the process.

Sample No.	1	2	3	4	5	6	7	8	9	10
Mean($\bar{X}$)	21	26	23	18	19	15	14	20	16	16
Range (R)	5	6	9	7	4	7	4	9	8	6

Assume for $n = 5$, $A2 = 0.58$, $D3 = 0$ and $D4 = 2.115$.

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1. (A) Write a short note on discrete and continuous distribution ?

(B) What do mean by distrust of Statistics ?

(C) The average marks of 100 students were found to be 50. Later, it was discovered that a score of 64 was misread as 84. Find the corrected mean of the 100 students.

(D) Find the geometric mean of 4, 9, 12 and 48.

(E) Compare between mean deviation and standard deviation.

(F) Find the number of Permutations of the letters of the word 'MATHEMATICS'. How many of these begin with H and end with S.

(G) If $P(A) = 0.3$ and $P(A \cup B) = 0.7$. find $P(B)$, if A and B are mutually exclusive.

(H) A bag contains 8 balls of which 5 are white and 3 are black. Two balls are drawn at random. What is the probability that both are white ?

7. (a) Two dice are thrown. Find the probability that at least a sum of 10 occurs.

(b) A box contains 5 different red and 6 different white balls. In how many ways can 6 balls be selected so that there are at least two balls of each colour.

(Or)

8. Mobile charger supplier drawn randomly constant sample size of 500 chargers every day for quality control test. Defects in each charger are recorded during testing. 12, 14, 16, 18, 16, 14, 12, 12, 32, 16, 18, 16, 12, 14, 16, 18, 12, 19, 18 and 21

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

(Or)

(I) In the production of certain rods a process is said to be in control if the outside diameters have a mean 2.532 and a standard deviation of 0.002. Find the central limits for the mean of random samples of size 4.

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. By using grouping method, locate Mode from the following data.

Mid value	30	40	50	60	70	80	90
Frequency	7	12	17	29	31	5	3

(Or)

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) Find the number of ways in which 5 boys and 3 girls can be seated in a row so that no two girls are together.

(b) Three group of children contain respectively 3 girls and 1 boy, 2 girls and 2 boys and 1 girl and 3 boys. One child selected at random from each group. Show that the chance that the three selected consist of 1 girl and 2 boys is $\frac{13}{32}$.

(Or)

3. Find 'less than' and 'more than' cumulative frequencies and draw 'Ogives' from the following data :

Weight (in kg)	30-34	35-39	40-44	45-49	50-54	55-59	60-64
Frequency	3	5	12	18	14	6	2

(Or)

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

Marks	4-8	9-13	14-18	19-23	24-28
No. of Students	3	4	3	2	4

(Or)

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

Class Interval	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	6	12	15	28	20	14