

Roll No. :

Total No. of Questions : 9] [Total No. of Printed Pages : 6

BCA-3005

BCA (Semester-III) (NEP) Examination, 2024-25

(Major)

ELEMENTS OF STATISTICS

[Paper : Fifth]

Time : 2 Hours]

[Maximum Marks : 75

Note :1. This paper consists of **three** sections - **A, B** and **C**.
Attempt questions from **all** sections as directed.

2. The candidates are required to answer in serial order only. If there are many parts of a question, answer them in continuation.

3. "B" Copy will not be provided.

Section-A

Short Answer Type Questions

Note : Attempt **all** questions. Each question carries **5** marks. [9×5=45]

BCA-3005/5630

(1)

Turn Over

1. (a) What do you understand by Distrust of Statistics?
- (b) If the class mid points in a frequency distribution of age of a group of persons are 25, 32, 39, 46, 53 and 60. Find the size of the class-interval and class limits.
- (c) What do you mean by measures of Central Tendency?
- (d) Find the harmonic mean of 2, 5, 7 and 9.
- (e) The marks obtained by the students of BCA are 55, 49, 65, 63, 49, 92 and 79. Find the range and coefficient of range of the given data.
- (f) Prove that :

$$0! = 1$$
- (g) How many permutations of the letters of the word 'EXAMINATION' are there?
- (h) A bag contains tickets numbered from 1 to 20. Two tickets are drawn. Find probability that both the numbers are primes.
- (i) What are the limitations of statistical quality control?

Section-B

Long Answer Type Questions

Note : Attempt **any one** question from the following. Each question carries **15** marks. [15×1=15].

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

Weight (in Kg)	Frequency
30-34	3
35-39	5
40-44	12
45-49	28
50-54	14
55-59	6
60-64	2

3. By using Grouping method, locate mode from the following data :

Class	Frequency
0-5	5
5-10	7
10-15	9
15-20	18
20-25	16
25-30	14
30-35	6
35-40	3

4. Find mean deviation about median for the following data:

Marks	No. Of Students
0-10	6
10-20	8
20-30	14
30-40	16
40-50	4
50-60	2

5. Calculate standard deviation and coefficient of variation for the following distribution :

Class	Frequency
30-40	3
40-50	7
50-60	12
60-70	15
70-80	8
80-90	3
90-100	2

Section-C

Long Answer Type Questions

Note : Attempt **any one** question from the following. Each question carries **15** marks. [15×1=15]

6. (a) To prove that :
- $$P(n, r) = P(n-1, r) + r \cdot P(n-1, r-1)$$
- (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?
7. (a) Two dice are thrown. Find the probability that at least a sum of 10 occurs.
- (b) A problem in mathematics is given to the three students A, B and C whose chances of solving it are $\frac{1}{2}$, $\frac{3}{4}$ and $\frac{1}{4}$ respectively. What is the probability that the problem will be solved?
8. The following table shows the number of missing rivets noted at the final inspection of 12 aircrafts. Find the control limits for the defects chart and comment on the state of control.

Aircraft No.	1	2	3	4	5	6	7	8	9	10	11	12
No. Of Missing rivets	7	15	13	18	10	14	13	10	20	11	22	15

9. The following data show the values of sample mean ($\bar{X}$) and range (R) for 10 samples of size 5 each. Draw mean chart and comment on the state of control the process.

Sample Number	Mean ($\bar{X}$)	Range(R)
1	43	5
2	49	6
3	37	5
4	44	7
5	45	7
6	37	4
7	51	8
8	46	6
9	43	4
10	45	6

(Conversion factors for $n = 5$ are $A_2 = 0.483$, $D_3 = 0$, $D_4 = 2.004$).

----- X -----