

4. Calculate median and mode for the following frequency distribution :

Marks	Frequency
25—30	22
30—35	34
35—40	50
40—45	42
45—50	38
50—55	14

5. Find standard deviation and coefficient of variation of the following data :

Class Interval	Frequency
0—10	10
10—20	15
20—30	25
30—40	25
40—50	10
50—60	10
60—70	5

Roll No.

BCA-305(N)

B. C. A. (Third Semester) EXAMINATION, Dec., 2019

(New Course)

Paper Fifth

ELEMENTS OF STATISTICS

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt questions from all Sections as directed.

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

Section—A

(Short Answer Type Questions)

Note : Attempt all questions. Each question carries 3 marks.

- (A) Write a short note on scope of Statistics.
- (B) Write the objects of classification.
- (C) The mean marks of 50 students in Section A is 40 and mean marks of 40 students in Section B is 45. Find the combined mean of the 90 students in both the Sections.

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- (D) The arithmetic mean of two observations is 25 and the harmonic mean is 9. What is geometric mean of the series ?
- (E) Find the range and coefficient of range for the following data :

Variable	Frequency
83	6
88	8
93	9
98	13
103	5
108	3

- (F) How many words can be formed from the letters of the word 'SUNDAY' ? How many of these begin with D ?
- (G) If ${}^nP_r = 1680$ and ${}^nC_r = 70$, find r .
- (H) In a production of certain rods, a process is said to be in control if outside diameters have a mean 2.5 and a S. D. of 0.004. Find the control limits for the mean of random samples of size 4.
- (I) Explain the following :
- Mutually exclusive event
 - Conditional probability

(C-69)

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Section—B

(Long Answer Type Questions)

Note : Attempt any *two* questions. Each question carries 12 marks.

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

Class Interval	Frequency
100—110	2
110—120	3
120—130	7
130—140	11
140—150	15
150—160	7
160—170	2
170—180	3

3. Compute quartile deviation and its coefficient from the information given below :

Mid Value	Frequency
5	5
15	8
25	15
35	20
45	16
55	10
65	6

(C-69) P. T. O.

Section—C

(Long Answer Type Questions)

Note : Attempt any *two* questions. Each question carries 12 marks.

6. (a) Prove that :

$$P(n, r) = P(n-1, r) + r.P(n-1, r-1)$$

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

7. (a) A box contains 4 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 ?

- (b) What is the chance of throwing a total of 5 or 10 with two dice ?

8. (a) A problem in statistics is given to the three students A, B and C whose chances of solving it are $\frac{1}{2}, \frac{1}{3}, \frac{3}{4}$ respectively. What is the probability that the problem will be solved ?

- (b) A bag contains 3 red and 4 black balls and a second bag contains 5 black balls and 4 red balls. A ball is drawn from each bag. Find the probability that one is red and other is black.

9. The following table gives the result of inspection of 15 samples of 1000 items each taken on working days.

Draw a np -chart :

Sample No.	No. of Defectives
1	9
2	10
3	12
4	8
5	7
6	15
7	12
8	10
9	8
10	10
11	7
12	13
13	14
14	15
15	16