3. (i) In how many ways can 3 boys and 3 girls sit in a row if the boys and the girls are each to sit together?

   (ii) In how many ways can 3 boys and 3 girls sit in a row if only the boys must sit together?

4. Explain the terms :
   (i) Control limits.
   (ii) Tolerance limits.
   (iii) Specification limits.

5. Differentiate between variance and coefficient of variation.

## Section-B

### (Short Answer Questions)

Note : Attempt any **two** questions.

$$7\frac{1}{2} \times 2 = 15$$

6. Define probability. Suppose that A and B are mutually exclusive events for which $P(A)=0.3$ and $P(B)=0.5$. What is the probability that (a) either A or B occurs (b) A occurs but B does not (c) both A and B occur.

7. Explain the construction and interpretation of mean chart and range chart.

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8. What is median? Calculate median of the following data :

| Class Interval | Frequency |
|---|---|
| 15-25 | 4 |
| 25-35 | 11 |
| 35-45 | 19 |
| 45-55 | 14 |
| 55-65 | 0 |
| 65-75 | 2 |

## Section-C

### (Detailed Answer Questions)

Note : Attempt any **three** questions.

$$15 \times 3 = 45$$

9. (a) Explain and illustrate the uses of statistics in commerce and business.

   (b) Discuss the steps involved in tabulation and classification of data.

10. What is dispersion? Explain mean deviation, standard deviation and Range with their uses.

11. Describe arithmetic, harmonic and geometric means for grouped and ungrouped data with their limitations.

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11. (i) Define Mutually exclusive events and Independent events.

(ii) From a group of 3 Indians, 4 Pakistanis, and 5 Americans a subcommittee of four people is selected at random. Find the probability that the sub-committee will consist of

(a) 2 Indians and 2 Pakistanis

(b) 1 Indian, 1 Pakistani and 2 Americans

12. (i) Define Classical Definition of Probability? What are its limitations?

(ii) A can hit a target 3 times in 5 shots, B 2 times in 5 shots, and C 3 times in 4 shots. They fire a volley. What is the probability of hitting 2 shots?

13. Distinguish between process control and product control. Explain the construction and operation of control chart for number of defective.

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# 18015(CV-III)

## B.C.A. Examination, Dec.-2021

### ELEMENTS OF STATISTICS

#### (BCA-305)

*Time : 1½ Hours ]*       *[Maximum Marks : 75*

**Note :** Attempt questions from **all** sections as per instructions.

### Section-A

### (Very Short Answer Questions)

**Note :** Attempt any **two** questions. Each question carries 7.5 marks. Very Short Answer is required not exceeding 75 words. $2 \times 7.5 = 15$

1. Define Discrete and continuous variables.

2. Discuss in brief geometric mean along with its merits and demerits.

3. Define partition values? What purpose do partition values serve?

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4. State addition theorem of probability for three events.

5. Distinguish between defects and defectives.

## Section-B
### (Short Answer Questions)

**Note :** Answer any **one** question out of the following three questions. Each question carry 15 marks. Short answer is required not exceeding 200 words. $1 \times 15 = 15$

6. What is statistical average or central tendency? Discuss the uses of all measure of central tendency.

7. What is dispersion/Variability? Explain various methods of measuring dispersion along with their merits and demerits?

8. Define combinations and permutations. How many baseball teams are possible of nine members among twelve boys, without regard to the position played by each member?

## Section-C
### (Detailed Answer Questions)

**Note :** Attempt any **two** questions out of

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the following five questions. Each question carry 22.5 marks. Answer is required in detail. $2 \times 22.5 = 45$

9. Find the mean, median and mode wage of the following distribution.

| Wages (in Rs.) | No. of labourers |
|---|---|
| 20-30 | 3 |
| 30-40 | 5 |
| 40-50 | 20 |
| 50-60 | 10 |
| 60-70 | 5 |

10. A consumer affairs agency wants to check the average weight and standard deviation in weight of a new product on the Market. The weights (in grams) of these items are as follows:

| Class limits | Frequency |
|---|---|
| 74-77 | 3 |
| 77-80 | 6 |
| 80-83 | 9 |
| 83-86 | 3 |
| 86-89 | 4 |

18015(CV-III)/3 **P.T.O.**