

Roll No.

BCA-305(N)

B. C. A. (Third Semester) EXAMINATION, Dec., 2017

(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 from this Section. Each question carries 3 marks.

1. (A) What are main limitations of Statistics ?
- (B) What do you mean by Cumulative frequency distribution ?
- (C) Prove that if values of the variable are multiplied (or divided) by a constant value, the arithmetic mean so obtained is same as the initial arithmetic mean is multiplied (or divided) by the constant value.

- (D) Draw the cumulative frequency curve from the following data and find out median and quartiles :

Marks	No. of students
10—15	5
15—20	8
20—25	15
25—30	20
30—35	16
35—40	10
40—45	6

- (E) Compare between mean deviation and standard deviation.
- (F) Find the number of permutations of the letters of the word 'English'. How many of these begin with E and end with I ?
- (G) A and B are disjoint events :
 $P(A) = .5$, $P(A \cup B) = .6$, then find $P(B) = ?$
- (H) In the production of certain rods, a process is said to be in control if the outside diameters have a mean 2.5 and a S. D. of 0.002". Find the control limits for the mean of random samples of size 4.
- (I) What are the limitations of statistical quality control ?

Section—B

12 each

(Long Answer Type Questions)

Note : Attempt any *two* questions from this Section.

2. Write short notes on the following :

- (a) Discrete and continuous distribution

- (b) Chronological classification
- (c) Geographical classification
- (d) Ordinary and Cumulative Frequency Distribution

3. Find the mode from the given data :

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

4. If the A. M. of two numbers is 4.5 and their H. M. is 4, then find the numbers.
5. Calculate semi-interquartile range and coefficient of quartile deviation from the following data :

Class	Frequency
0—5	29
5—10	95
10—15	225
15—20	93
20—25	29
25—30	7
30—35	9
35—40	6
40—45	4
45—50	3

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Section—C

12 each

(Long Answer Type Questions)

Note : Attempt any *two* questions from this Section.

6. (a) Find the number of arrangements of a multi-set objects some of which are alike say n_1 are alike of first kind, n_2 are alike of second kind, ... n_r are alike of r th kind.
- (b) In how many ways a football eleven can be chosen out of 17 players when (i) five particular players are to be always included, (ii) two particular players are to be always excluded.
7. A and B take turns in throwing two dice, the first to throw 10 being awarded the prize. Show that if A has the first throw, their chances of winning are in the ratio 12 : 11.
8. The following table gives the average daily production figure for 20 months each of 25 working days. Given that the population standard deviation of daily production is 35 units, draw a control chart for mean :

210	212
205	215
210	208
212	214
211	210
209	204
219	211
204	211
212	203
209	211

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9. 20 Samples each of size 100, of glass vessels, were inspected. The results of inspection are given below :

Sample No.	No. of Defects
1	2
2	1
3	3
4	0
5	2
6	3
7	1
8	2
9	0
10	4
11	3
12	2
13	0
14	4
15	1
16	7
17	0
18	1
19	3
20	1

Draw a p chart.

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