

Roll No.

[2]

BCA-305(N)

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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

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

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 ρ chart.