Roll No.

BCA–305(N)

B. C. A. (Third Semester)
EXAMINATION, Dec., 2016

(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 equal 3 marks.

1. (A) Write about difference between primary and secondary data.

(B) Write the objects of classification.

(C) If the arithmetic average of data given below be 165 rupees, find the missing term :

Monthly wages in (₹)	Number of Labourers
100	30
150	20
200	15
–	10
300	4
500	1

(D) Find the range of the following distribution of families according to its size (No. of children).

Size of family	No. of families
0	8
1	12
2	15
3	25
4	4
5	6

(E) Find n if $(n+1)! = 12\,(n-1)!$.

(F) If $P^n_r = 720$ and ${}^nC_r = 120$ find r.

(G) If $P[A] = 0.5$ and $P[A \cup B] = 0.6$. Find $P[B]$ if A and B are mutually exclusive.

(H) If $B \subset A$ then

(i) $P[A \cap \bar{B}] = P[A] - P[B]$

(ii) $P[B] \leq P[A]$

(I) Write a short note of statistical quality control.

Section—B 12 each

(Long Answer Type Questions)

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

2. Calculate the median and mode from the following series :

Marks	No. of Students
0—10	15
10—20	25
20—30	52
30—40	56
40—50	78
50—60	80
60—70	70

3. Find standard deviation (S. D.) and coefficient of variation (C. V.) from the following data :

Age groups (years)	No. of workers
25—30	10
30—35	12
35—40	25
40—45	40
45—50	10
50—55	3

4. (a) There are 5 men and 5 ladies to dine at a round table. In how many ways can they seat themselves so that no two ladies are together ?

(b) Find the number of permutations of the letters of the word 'ENGLISH'. How many of these begin with E and end with I.

5. A husband and wife appear in an interview for two vacancies in the same post. The probability of the husband's selection is $\frac{1}{7}$ and that of wife's selection is $\frac{1}{5}$. What is the probability that only one of them will be selected ?

Section—C 12 each

(Long Answer Type Questions)

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

6. The probability that a person can hit a target is $\frac{3}{5}$ and the probability that another person can hit the same target is $\frac{2}{5}$. But the first person can fire 8 shots in the time. The second person fires 10 shots. They fire together. What is the probability that the second person shoots the target ?
7. A drilling machine bores holds with a mean diameter 0.5230 cm and a standard deviation of 0.0032 cm. Calculate the 2-sigma and 3-sigma upper and lower control limits for means of sample of 4.
8. Explain the rule, types and limitation of presentation of data.

9. We have the following data on the monthly expenditure of food (in ₹) for 30 house holds in locality :

145	159	196	285	242	223
256	291	379	129	135	169
184	230	245	244	265	298
144	135	172	173	229	245
220	258	278	243	220	258

(i) Obtain a frequency distribution using the following class interval : 100-150, 150-200, 200-250, 250-300, 300-350.

(ii) What percentage of households spends less than ₹ 250 per month and what percentage of households spends more than ₹ 200 per month ?

Or

By using Grouping method locate mode from the following data :

Mid value	Frequency
30	7
40	12
50	17
60	29
70	31
80	5
90	3