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(Printed Pages 4)

Roll No. _____

19/190

B.C.A. (Third Semester) Examination, 2019

Fifth Paper

(Elements of Statistics)

Time : Three Hours ***Maximum Marks : 75***

Note: Answer any **five** questions. **All** questions carry equal marks. The answers to short answer type questions should not exceed 200 words and answers to long answer type questions should not exceed 500 words.

1. (a) Define population and sample with suitable example. 3

   (b) Distinguish between frequency and cumulative frequency. 3

P.T.O.

(c) Describe in brief the different kinds of classification. 4

(d) How can the determine the numbers of classes for a frequency distribution? 5

2. (a) What are the properties of a good measure of Central Tendency? 3

(b) The A.M. of two numbers is 6.5 and their G.M. is 6. Find the value of these two numbers. 3

(c) Find the value of N, if the sum of N observations is 630 and their mean is 42. 3

(d) Given two values x_1 and x_2. Prove that A.M. $\geq$ G.M. $\geq$ H.M. 6

3. (a) What are the uses of dispersion? 4

(b) What is the coefficient of variation and its importance? 5

(c) Give the merits and demerits of range. 6

4. (a) Express ${}^{n}P_r$ in terms of ${}^{n}C_r$ 2

(b) Find the value of r if ${}^{12}P_r = 1320$ 3

(c) If $P(A) = 0.7$, $P(\bar{B}) = 0.5$ and

$P(\bar{A} \cup \bar{B}) = 0.6$ then find the value of $P(A \cup B)$. 4

(d) Find the value of ${}^{10}C_4 \times {}^{10}C_2$ and ${}^{5}C_2 / {}^{6}C_2$. 6

5. (a) Differentiate between exhaustive events and mutually exclusive events. 3

(b) A problem in physics is given to two students A and B whose chances of solving it are ½ and ¾ respectively. What is the probability that the problem will be solved if two of them try independently. 3

(c) Give the classical definition of probability. 3

(d) Two unbiased dice are thrown. Find the probability that 6

(i) Both the dice show the same number.

(ii) The total of the number on the dice is 8.

6. (a) Define control limits and tolerance limits. 3

(b) What do you understand by control charts in statistical quality control? 5

(c) How do you set the control limits for R-charts in statistical quality control? 7

7. (a) Explain the addition theorem of Probability. 2

(b) Distinguish between median and mode. 3

(c) What are the four main function of Statistics? 2

(d) Four cards are drawn at random from a pack of 52 cards. Find the Probability that 4+4

(i) They are a king, a queen, a jack and an ace.

(ii) Two are black and two are red.