C

(Printed Pages 4)

Roll No. _____

20/1090

B.C.A. (Third Semester)

Examination, 2020

Fifth Paper

(Elements of Statistics)

Time : Three Hours *Maximum Marks : 75*

Note: Answer any **five** questions. **All** questions carry equal marks.

Note: The answers to short answer type questions should not exceed 200 words and the answers to long answer type questions should not exceed 500 words.

1. (a) Define statistics, population and sample, frequency and cumulative frequency with example. 7

(b) The marks obtained by 30 students are as follows : 8

36, 20, 19, 18, 42, 10, 44, 32, 15, 22, 27, 40, 45, 20, 39, 25, 18, 12, 19, 44, 35, 45, 46, 21, 27, 42, 19, 18, 36, 44.

Make frequency table and cumulative frequency table.

2. (a) What do you mean by Central tendency? Explain it. What are the properties of a good measure of Central tendency?

(b) The arithmetic mean of 5 numbers 5, 12, 17, b, 20 is 15. Find the value of b.

3. (a) Define arithmetic mean. Prove that the algebraic sum of deviations of all variate values from their mean is zero. 6

(b) The mean weight of 15 students is 100 lbs. The mean weight of 05 students from them is 100 lbs. What is the mean weight of the rest of the students. 3

(c) From the following data, Calculate the value of median : 6

Marks	No. of Students
1-5	3
6-10	6
11-15	14
16-20	12
21-25	5

4. (a) What do you mean by Disperson? Define mean deviation, standard deviation and coefficient of variation. 12

(b) Obtain the coefficient of variation by using the following data : 3

$N = 10$, $\Sigma x_i = 60$, $\Sigma x_i^2 = 1000$

5. (a) Show that : 3

$^{n}p_r = r!\,^{n}C_r$.

(b) How many committees of 3 can be formed from 8 people? 3

(c) Find the value of $^{25}p_2$ and $^{6}C_2 / {}^{7}C_2$. 4

(d) Let A and B be events with $P(A)=\frac{3}{8}$, $P(B)=\frac{1}{2}$ and $P(A \cap B)=\frac{1}{4}$.

Find :

(i) $P(A \cup B)$ (ii) $P(\bar{A})$ and $P(\bar{B})$

(iii) $P(\bar{A}^{\circ} \cap \bar{B})$. 5

6. (a) State classical and statistical definition of probability. 6

(b) Define Sample space. 3

(c) Define event, equally likely cases and mutually exclusive cases. 3

(d) A coin is tossed thrice. What is the probability that atleast one head occurs. 3

7. What are the causes of variation in quality? Describe $\bar{X}$ and R chart. 15