18U282 (Pages: 2) Name : …….

Reg. No. :……..

SECOND SEMESTER B.Voc. DEGREE EXAMINATION, APRIL 2019

B.Voc. – Information Technology

CC17U ST1 C01/CC18U SDC2 DS06 – BASIC STATISTICS AND PROBABILITY

(2018 Admission)

Time: Three Hours Maximum: 80 Marks

Part A

Answer ***all*** questions. Each question carries 1 mark.

Fill up the blanks:

1. Second quartile is also known as ….....
2. The set of all possible outcomes of a random experiment is ….....
3. The axiomatic definition of probability was given by ….....
4. If $P(A \cap B \cap C) = P(A)P(B)P(C)$,then A, B, C are …..... events.
5. If F(x) is the distribution of a random variable X, then $F(+\infty) - F(-\infty) =$ ….....

Write true or false:

6. Deciles divide the distribution under frequency curve into 100 equal parts.
7. Standard deviation is not affected by the change in scale.
8. Probability can take negative values.
9. An event whose occurrence is inevitable is called sure event.
10. Rank correlation coefficient always lies between -1 and +1.

(10 × 1 = 10 Marks)

Part B

Answer any ***eight*** questions. Each question carries 2 marks.

11. Distinguish between population and sample.
12. What are the advantages of sampling over census?
13. Define harmonic mean.
14. Find the median of 41,26,52,13,75,38,59,62.
15. What are the uses of standard deviation?
16. What is curve fitting?
17. Distinguish between correlation and regression.
18. From a deck of cards, a card is selected at random. What is the probability that it is a king or diamond?
19. What is scatter diagram?
20. What are the axioms of probability?
21. Write an example for a continuous random variable.
22. State any two properties of a distribution function.

(8 × 2 = 16 Marks)

Part C

Answer any ***six*** questions. Each question carries 4 marks.

23. Why AM is known as the best measure of central tendency?
24. Compare and contrast correlation and regression.
25. Establish a relationship between AM, HM, and GM.
26. State and prove addition theorem of two events.
27. Three coins are tossed together. Find the probability distribution of the number of heads obtained.
28. Fit a straight line $y = ax + b$ to the following data.

x	5	7	10	12
y	12	20	15	24

29. The regression equations between two variables x and y are $x = 4y + 5, 16y = x + 64$. Find the mean values of x and y and the correlation coefficient between x and y.
30. Explain the terms partial correlation and multiple correlation.
31. State Bayes theorem. A box contains 4 white and 5 red balls while another box contains 3 white and 2 red balls. A ball drawn at random from one of the boxes turns out to be white. What is the probability that it is from the first box?

(6 × 4 = 24 Marks)

Part D

Answer any ***two*** questions. Each question carries 15 marks.

32. Define a random variable. The distribution function of a random variable X is given by

$$F(x) = \frac{1}{4}\, x(3x - x^2)\,, 0 \le x \le 2$$

Find its p.d.f. and $P(0.5 \le x \le 1.5)$.

33. From the following data find i) the regression equations, ii) the correlation coefficient

x	25	28	35	32	31	36	29	38	34	32
y	43	46	49	41	36	32	31	30	33	39

34. The sales of two salesman A and B of a company over a sample of days were as follows. Find out who is more consistent in his sales.

A	5.5	2.5	6.0	3.5	4.5	5.0	5.0	4.0
B	4.5	2.0	3.5	2.5	4.0	5.0	2.5	4.0

35. Compute mean, median and mode from the following data.

Age	15-19	20-24	25-29	30-34	35-39	40-44
Number of persons	4	20	38	24	10	4

(2 x 15 = 30 Marks)

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