22U131S (Pages: 2) Name: …….

Reg. No: …….

FIRST SEMESTER B.Sc. DEGREE EXTERNAL EXAMINATION

(CUCBCSS-UG)

CC15U ST1 C01 - BASIC STATISTICS AND PROBABILITY

(Statistics – Complementary Course)

(2015 to 2018 Admissions – Supplementary/Improvement)

Time: Three Hours Maximum: 80 Marks

Section A

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

1. Mean is a measure of …….
2. P (AUB) = …….
3. The correlation coefficient is independent of …….
4. The equation used to find coefficient of variation is …….
5. An event which cannot occur is called …….

Write true or false:

6. The correlation between two variables is unity, then there is no correlation.
7. Mean deviation is minimum when deviations are taken from mode.
8. Probability is a measure lying between -1 to +1.
9. $P(A)+P(A^c) = 0$.
10. Median divides the data in to two equal parts.

(10 × 1 = 10 Marks)

Section B

Answer ***all*** questions in one sentence each. Each question carries 2 marks.

11. Define regression.
12. Find the geometric mean of 55, 60, 25, 75, 63, 95, 86, 13.
13. Define probability mass function.
14. State axiomatic definition of probability.
15. Define scatter diagram.
16. Write any two merits and demerits of harmonic mean.
17. Define random variable.

(7 × 2 = 14 Marks)

Section C

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

18. State and prove addition theorem of probability.
19. Define central tendency. What are the desirable properties of central tendency?
20. Calculate quartile deviation of 23, 25, 28, 31, 38, 40, 46.

21. Find mean and variance of first n natural numbers.

22. State and prove multiplication theorem of probability.

(3 × 4 = 12 Marks)

Section D

Answer any ***four*** questions. Each question carries 6 marks.

23. Obtain rank correlation from the following data

X	115	109	112	87	98	120	98	100	98	118
Y	75	73	85	70	76	82	65	73	68	80

24. Given P(A)= 0.30, P(B) = 0.78 and P(A ∩ B)= 0.16. Find (i) $P(A^c \cap B^c)$ (ii) $P(A^c \cup B^c)$

25. Obtain the least squares estimate of a and b for the straight-line y= a + bx.

26. Show that the sum of squares of deviations of the observations from a number A is least when A = A.M.

27. The regression equations between two variables x and y are x= 4y+5, 16y=x+64. Find (i) mean values of x and y (ii) correlation coefficient between x and y.

28. A random variable X has density $f(x) = cx^2, 0 < x < 3$

$= 0$, otherwise

Find c and compute $P(1 < x < 2)$

(4 × 6 = 24 Marks)

Section E

Answer any ***two*** questions. Each question carries 10 marks.

29. The runs scored by two batsmen in 5 innings are given Find which batsman is more consistent

A	25	50	45	30	70
B	10	70	50	20	95

30. Prove that correlation coefficient lies between -1 to 1.

31. State and prove Bayes theorem.

32. Find mean, median and mode from the following data.

Marks	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	5	15	40	32	20	8

(2 × 10 = 20 Marks)

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