SECOND SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2022

(CUCBCSS-UG)

CC15U PSY2 C02 - PSYCHOLOGICAL STATISTICS

(Psychology – Complementary Course)

(2015 to 2018 Admissions – Supplementary/Improvement)

Time: Three Hours   Maximum: 80 Marks

PART A

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

(a) Choose correct answer:

1. The range of simple correlation coefficient is

    (a) $-1 < r < 0$ (b) $0 < r < 1$ (c) $-1 \leq r \leq 1$ (d) None

2. If $b_{yx} > 1$, then b_{xy} is ----------

    (a) less than 1   (b) greater than 1   (c) equal to 1   (d) equal to 0

3. If A is impossible event, then P (A) ----------

    (a) 1   (b) 0   (c) ∞ (d) None

4. Which of the following is an example for discrete random variable?

    (a) Height   (b) Weight

    (c) Life length of bulbs   (d) number of students.

5. When r = 1, the correlation is ----------

    (a) perfect positive   (b) perfect negative   (c) no correlation   (d) None.

(b) Fill in the blanks:

6. Graphical representation of correlation known as ----------

7. When A and B are disjoint, then P (A U B) ----------

8. The range of multiple correlation coefficient is ----------

9. When A and B are independent, then P(A|B) = ----------

10. The regression equation of Y on X is ----------

                                                                                                (10 × 1 = 10 Marks)

PART B

Write short notes on *all* questions. Each question carries 2 marks.

11. Define sample space.

12. Distinguish between negative and positive correlation.

13. Define partial correlation.

14. State the axiomatic definition of probability.

15. Given $r_{12} = 0.67$, $r_{13} = 0.75$ and $r_{23} = 0.63$. Find $r_{12.3}$.

16. Define probability mass function.

17. Define multiple regression.

18. Write any two properties of regression coefficients.

19. Define distribution function.

20. Given P (A U B) = 0.4, P(A) =0.3 and P(B) =0.2. Find P (A ∩ B).

(10 × 2 = 20 Marks)

PART C
Answer any *six* questions. Each question carries 5 marks.

21. Distinguish between pairwise and mutual independence.

22. Calculate rank correlation for the following data

X	41	30	28	54	50	50
Y	20	26	29	48	34	41

23. Distinguish between correlation and regression.

24. Discuss random variables and their probability distributions.

25. If P (A) =1/3, P(B) = 1/8 and P (A ∩ B) = 1/16. What is the probability that

    (a) At least one happens   (b) None happen   (c) Exactly one happens.

26. Given n = 12, $\sum x = 30$, $\sum y = 5$, $\sum x^2 = 670$, $\sum y^2 = 285$ and $\sum xy = 334$. Obtain correlation coefficient.

27. For the data given below, obtain the two regression lines

X	8	6	4	7	5
Y	9	8	5	6	2

28. The partial correlation r_{12}= 0.6, r_{13}= 0.4 and r_{23}= 0.5. Find multiple correlation coefficients $R_{1.23}, R_{2.13}$ and $R_{3.12}$.

(6 × 5 = 30 Marks)

PART D
Answer any *two* questions in an essay each. Each question carries 10 marks.

29. Explain different types of correlation

30. Find the regression equation of X on Y. Hence find value of Y when X =20.

X	10	11	12	9	8
Y	12	18	20	10	10

31. State and prove addition theorem for three events.

32. Obtain Karl Pearson correlation coefficient from the following data.

X	20	25	30	40	27
Y	15	23	32	34	18

(2 × 10 = 20 Marks)

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