

23U242

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Name:

Reg.No:

SECOND SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2024

(CBCSS - UG)

(Regular/Supplementary/Improvement)

CC19U PSY2 C02 - REGRESSION ANALYSIS AND PROBABILITY THEORY

(Psychology - Complementary Course)

(2019 Admission onwards)

Time : 2.00 Hours

Maximum : 60 Marks

Credit : 3

Part A (Short answer questions)

Answer *all* questions. Each question carries 2 marks.

1. What is Correlation?
2. Define scatter diagram.
3. What is the meaning of zero correlation coefficient?
4. What are the advantages of rank correlation coefficient?
5. Why there are two regression lines?
6. Write down the properties of regression coefficients.
7. What is multiple regression?
8. Define a random experiment.
9. Define 'a priori' definition of probability.
10. Define independent events.
11. Distinguish between discrete and continuous random variables.
12. Write any two properties of distribution function of a discrete random variable.

(Ceiling: 20 Marks)

Part B (Short essay questions - Paragraph)

Answer *all* questions. Each question carries 5 marks.

13. Explain the different methods for studying correlation.
14. From the following information, obtain the correlation coefficient.
 $N=12, \sum x = 30, \sum y = 5, \sum x^2 = 670, \sum y^2 = 285, \sum xy = 334$

15. Find the most likely price in Bombay corresponding to the price of Rs.70 at Calcutta from the following data: Average price at Calcutta 65; average price at Bombay 67; standard deviation at Calcutta 2.5; standard deviation at Bombay 3.5; coefficient of correlation between the prices in the two cities is 0.8.

16. Explain and distinguish between simple, partial and multiple correlation

17. A random variable X has the following distribution

X	0	1	2	3	4	5	6	7
F(x)	0	K	2K	2K	3K	K^2	$2K^2$	$7K^2 + K$

(a) Find K.

(b) $P(X \leq 6)$.

18. If $P(A)=0.6$, $P(B)=0.3$, $P(A \cap B) = 0.2$, then find out $P(A \cup B)$?

19. State the properties of probability density function

(Ceiling: 30 Marks)

Part C (Essay questions)

Answer any *one* question. The question carries 10 marks.

20. The following information gives the results of a competitive examination held in an area on February, 2014:

Age of Candidates	13	14	15	16	17	18	19	20	21
Percentage of failure	39	41	43	34	37	39	49	47	55

Find Karl Pearson's correlation coefficient.

21. The equations of two regression lines obtained in a correlation analysis are

$$8x - 5y + 14 = 0$$

$$24x - 7y - 5 = 0$$

(a) Identify the regression lines.

(b) Show that mean of x and mean of y are 1.923 and 5.875

(c) Show that $r_{xy} = +0.683$

(1 × 10 = 10 Marks)
