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B.A. DEGREE (C.B.C.S.S.) EXAMINATION, NOVEMBER 2022

Fourth Semester

Complementary Course—STATISTICAL TOOLS

(For B.A. History Model II and B.A. Sociology)

[2013—2016 Admissions]

Time : Three Hours   Maximum Marks : 80

Part A

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

1. What do you mean by mutually exclusive events ?

2. If A is a sure event what is P(A) ?

3. State different types of random variables ?

4. What is the variance of standard normal distribution ?

5. Define Type II error.

6. Define power of test.

7. Give the formula of Karl Pearsons Correlation Coefficient.

8. State the regression equation of y on x.

9. Write the formula of simple aggregate index number.

10. Give any two tests for a good index number.

$(10 \times 1 = 10)$

Part B

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

11. State the classical definition of probability.

12. What is the probability for getting a spade or an ace from a pack of cards ?

Turn over

13. Define independent events.

14. What is the variance of BD ?

15. If X—>N(50, 10) what is Z ?

16. Define null hypothesis.

17. Define significance level.

18. What is a test statistic ?

19. What is the principle of least squares ?

20. Distinguish between positive and negative correlation.

21. Write the formula of Spearman's rank correlation coefficient.

22. State time reversal test.

$(8 \times 2 = 16)$

Part C

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

23. State statistical definition of probability.

24. When 3 coins are tossed, what is the probability for getting exactly one head ?

25. What are the axioms of pdf ?

26. Explain briefly the steps used for testing a null hypothesis.

27. How will you test the proportion of success of a population ?

28. What is a scatter diagram ? How will you use it to study correlation between two variables ?

29. Obtain rank correlation coefficient for the following data :

    Rank x   :   1   2   3   4   5   6

    Rank y   :   3   6   2   5   1   4

30. What are the uses of an index number ?

31. Why Fischer's index number is called an ideal index number ?

$(6 \times 4 = 24)$

Part D

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

32. What are the important properties of ND ?

33. The average score in a national level test is 76 with standard deviation 8. In a sample of 100 randomly selected students at the state level, the average score obtained is 72. Test whether there is significant difference between the state scores and national scores at 5% level, assuming normality of scores.

34. For the following pair of values, obtain the correlation coefficient :

x	:	1	2	4	5	8	9
y	:	4	6	7	10	11	15

35. Calculate Laspeyer's and Paasche's index number for the following data :

Commodities	Base year		Current year	
	Price	Quantity	Price	Quantity
A	10	12	12	15
B	7	15	5	20
C	5	24	9	20
D	16	29	14	5

    $(2 \times 15 = 30)$