24U152 (Pages: 2) Name : .....

Reg. No : .....

FIRST SEMESTER UG DEGREE EXAMINATION, NOVEMBER 2024

(FYUGP)

CC24U COM1 MN109 - ESSENTIAL STATISTICS FOR BUSINESS ANALYTICS

(B.Com. - Minor Course)

(2024 Admission - Regular)

Time: 2.0 Hours Maximum: 70 Marks

Credit: 4

Part A (Short answer questions)

Answer ***all*** questions. Each question carries 3 marks.

1. What is Stratified Sampling? Give an example. [Level:1] [CO1]
2. Describe the relationship between sample size and the applicability of the Central Limit Theorem. [Level:2] [CO1]
3. Explain the Principle of 'Inertia of Large Numbers' in sampling theory. [Level:2] [CO1]
4. State the assumptions of t-test. [Level:1] [CO2]
5. Distinguish between dependent variable and independent variable. [Level:4] [CO2]
6. Explain why Spearman's correlation is considered a non-parametric test. [Level:2] [CO3]
7. How can we use a regression line to predict the value of one variable from another? [Level:1] [CO3]
8. Explain Secular trend and seasonal variation. [Level:2] [CO4]
9. How is a moving average used in Time Series Analysis (TSA)? [Level:1] [CO4]
10. Explain five yearly moving average. [Level:2] [CO4]

(Ceiling: 24 Marks)

Part B (Paragraph questions/Problem)

Answer ***all*** questions. Each question carries 6 marks.

11. Explain non-sampling errors with examples. [Level:2] [CO1]
12. Critically examine the assumptions in Sampling Theory. [Level:4] [CO1]
13. Discuss the applications of the chi-square test. [Level:2] [CO2]
14. A researcher claims that a new drug increases reaction time. In a study with 20 participants, the average reaction time increased by 15 milliseconds with a standard deviation of 5 milliseconds. Is this claim valid at the 1% level of significance? [Level:3] [CO2]

15. Compare and contrast the different types of correlation and their applications. [Level:4] [CO3]

16. A health study collected data on height (X, in inches) and weight (Y, in pounds) for 12 adults: [Level:3] [CO3]

X : 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84

Y : 110, 125, 135, 145, 155, 165, 175, 185, 195, 205, 215, 225

Calculate the regression equation (X on Y).

17. Compute Karl Pearson's coefficient of correlation: [Level:3] [CO3]

X : 100, 110, 120, 130, 140, 150, 160, 170, 180

Y : 200, 220, 240, 260, 280, 300, 320, 340, 360

18. Calculate trend values using three-yearly moving averages for the data given below: [Level:3] [CO4]

Year	2014	2015	2016	2017	2018	2019	2020
Price (Rs)	30	32	31	35	34	33	36

(Ceiling: 36 Marks)

Part C (Essay questions)

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

19. Based on information on 1,000 randomly selected fields about the tenancy status of the cultivation of these and use of fertilizers, collected in an agro- economic survey the following classification was noted: [Level:3] [CO2]

Particulars	Owned	Rented	Total
Using fertilizers	416	184	600
Not using fertilizers	64	336	400
Total	480	520	1,000

(Five percent value of chi-square with1 d.f = 3.841)

Would you conclude that owner cultivators are more inclined towards the use of fertilizers at 5% level.

20. Fit a straight-line trend using the method of least squares for the following data and estimate the profit for the year 2023: [Level:3] [CO4]

Year	2016	2017	2018	2019	2020	2021	2022
Sales	300	320	340	330	350	365	375

(1 × 10 = 10 Marks)

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