C 80936 (Pages : 3) Name.....

Reg. No.....

FOURTH SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION, APRIL 2020

Statistics

STS 4C 04—APPLIED STATISTICS

Time : Three Hours Maximum : 80 Marks

Use of Calculator and Statistical Tables are permitted.

Part A

Answer **all** *questions in one word.*
Each question carries 1 *mark.*

1. A study based on complete enumeration is known as ————————.
2. The sampling error usually ———————— with increase in sample size.
3. ANOVA technique was developed by ————————.
4. Abbreviated form of analysis of variance is ————————.
5. Quarterly fluctuations observed in a time series data are termed as ———————— variation
6. A time series consists of data arranged in ———————— order.
7. ———————— is an ideal index number.
8. Index numbers are also known as ————————.
9. To ensure that the proportion of defective items in the manufactured product is not beyond certain limits is called ————————.
10. In control charts we establish ———————— limits.

(10 × 1 = 10 marks)

Part B

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

11. Define simple random sampling with and without replacement.
12. What is the difference between stratum and cluster.
13. Write down the model for two way ANOVA.
14. Briefly explain secular trend.
15. Define Laspeyr's price and quantity index numbers.

Turn over

16. Distinguish between assignable causes and chance causes of variation.

17. Define statistical quality control.

(7 × 2 = 14 marks)

Part C

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

18. Distinguish between linear and circular systematic sampling.

19. Write a short note on (i) seasonal variation and (ii) cyclical variation.

20. From the following data construct an index for 2017 taking 2016 as base using simple aggregative method :

Commodities	Prices in 2016 (Rs.)	Prices in 2017(Rs.)
A	50	70
B	40	60
C	80	90
D	110	120
E	20	20

21. Define ANOVA. What are the basic assumptions in ANOVA technique ?

22. What are the advantages of statistical quality control ?

(3 × 4 = 12 marks)

Part D

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

23. Explain stratified random sampling with suitable example.

24. Explain the method of moving averages for measuring trend. Also state the merits and demerits of this method.

25. Define Fisher's index number. Explain why it is known as an ideal index number.

26. Explain the construction of 'R chart'.

27. Explain the test procedure of one way ANOVA.

28. Distinguish between questionnaire method and schedules send through enumerators.

(4 × 6 = 24 marks)

Part E

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

29. Draw a graph to represent the following data showing the number of students in a college :

Year	:	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
No. of students	:	705	685	703	687	705	689	715	685	725	730

Calculate the 5-yearly moving averages of the above data and plot them on the same chart.

30. Explain (i) Simple random sampling ; (ii) Stratified random sampling ; (iii) Systematic sampling ; and (iv) Cluster sampling.

31. Compute Laspeyre's price index and Paasche's price index from the following data :

Commodities	Base Year		Current Year	
	Quantity	Price	Quantity	Price
A	40	4	35	3
B	15	3	20	4
C	20	6	15	5
D	30	5	25	2

32. To assess the significance of possible variation in performance in a certain test between the grammar schools of a city, a common test was given to a number of students taken at random from the senior fifth class of each of the four schools concerned. The results are given below. Make an analysis of variance of data :

Schools			
A	B	C	D
8	12	18	13
10	11	12	9
12	9	16	12
8	14	6	16
7	4	8	15

(2 × 10 = 20 marks)