

**B Sc DEGREE END SEMESTER EXAMINATION - JULY 2021**  
**SEMESTER 4 : STATISTICS FOR B Sc COMPUTER APPLICATION (CORE)**  
**COURSE : 19U4CRCST05 : SAMPLE SURVEY ANALYSIS AND DESIGN OF EXPERIMENTS**  
*(For Regular - 2019 Admission)*

Time : Three Hours

Max. Marks: 75

**PART A****Answer any 10 (1 marks each)**

1. What is non-sampling error?
2. Give an example for simple random sampling.
3. What is sampling frame?
4. What is proportional allocation?
5. What is precision?
6. What is relative precision of proportional allocation over SRS?
7. A design with provision for the elimination of two sources of variability is?
8. In CRD with four treatments, each replicated 5 times, degrees of freedom of the error sum of squares are?
9. The ..... sum of squares measures the variability of the observed values around their respective treatment means.
10. What is meant by ANOVA table?
11. What is CRD?
12. What is RBD?

**(1 x 10 = 10)****PART B****Answer any 5 (3 marks each)**

13. Explain random number table method for the selection of random samples.
14. Write the confidence limit for population proportion of SRS.
15. What are the factors to be considered in the allocation of sample to different strata in stratified sampling?
16. Explain Local control.
17. Write ANOVA table for one way classification.
18. Give a drawback of LSD.
19. Discuss the randomization in CRD.

**(3 x 5 = 15)****PART C****Answer any 4 (5 marks each)**

20. Signatures to a petition were collected on 688 sheets. Each sheet was provided with space for 50 signatures. A random sample of 50 was drawn and the numbers of signatures per sheet was counted is given below

No of signatures( $y_i$ )	52	51	46	42	40	37	32	29	27	15	14	10	8
No of sheets( $n_i$ )	1	2	2	1	8	7	2	2	1	1	2	1	1

Estimate the total no of signatures to the petition.

21. Determine the sample size for each stratum in Neyman allocation.
22. Compare stratified sampling with simple random sampling.

23. The daily profits of a random sample of shops in three towns, A,B and C are as follows:

Towns	Profits( in Rs.)				
A	62	60	74	80	
B	41	38	35		
C	92	87	104	103	101

Can it be concluded that the three towns have the same profits.

24. Explain Latin Square Design.

25. Data from a CRD to test the effectiveness of four treatments are as follows.  
 S.S due to treatments= 26399.35, Total S.S= 36344.75, Total observations=20.  
 Complete the ANOVA table and interpret the result.

**(5 x 4 = 20)**

**PART D**

**Answer any 3 (10 marks each)**

26. What is SRS? Derive the variance for SRSWR and SRSWOR.

27. Explain stratified sampling and its types. Derive the expression for variance under Neyman allocation.

28. Explain the analysis of one way classified data.

29. Four methods of blending penicillin were compared in a randomised block design. The blocks are blends of raw materials. Construct the ANOVA table. Are there differences between the methods? Use 5 % level of significance.

BLEND	METHOD			
	A	B	C	D
1	89	88	97	94
2	84	77	92	79
3	81	87	87	85
4	87	92	89	84
5	79	81	80	88

**(10 x 3 = 30)**