Tribhuvan University
Institute of Science and Technology
2071

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Bachelor Level/ First Year/ Second Semester/ Science	Full Marks: 60
Computer Science and Information Technology (STA. 159)	Pass Marks: 24
(Statistics - II)	Time: 3hours

Candidates are required to give their answers in their own words as for as practicable.
The figures in the margin indicate full marks.

All notation have usual meanings.

Group A   (2 x 10 = 20)

Answer any two questions

1. Explain the condition where simple random sampling is an appropriate method of drawing a random sample. Also derive the procedure the estimate the population mean, total and variance in simple random sampling. 10 households are selected from a cluster of 100 households by using simple random sampling method and the number of persons per household in the sample was observed as 2, 5, 6, 8, 10, 4, 5, 7, 6 and 5. Find the total population and variance.

2. What is the basic concept of Randomized Block Design (RBD)? State and explain the statistical model for RBD and also give the statistical analysis of RBD with one observation per cell.

3.
   a) Discuss the needs of sampling and differentiate between census and sample survey.
   b) Explain the 2^3 –experimental design, and also obtain the main and interaction effects.

Group B

Answer any eight questions   (8 x 5 = 40)

4. Write down the steps involved in sample survey and explain the procedures to determine the sample size.

5. What is questionnaire? Also state the requisite of a good questionnaire.

6. What do you understand about probability proportion to size sampling and state the procedure of drawing a random sample in probability proportion to size sampling plan.

7. Describe the situation where the systematic sampling is appropriate method for drawing a random sample. Explain the problem of drawing a linear systematic sample of size 5 from a population consisting of 23 units numbered from 1 to 23.

8. Compute the variance of stratified estimator $\bar{Y}_{st}$ of the population mean by assuming proportional allocation of a total sample of size 100 by using following information related to four strata.

H	1	2	3	4
N_h	200	400	300	100
S_h^2	7	3	3	7

9. Explain the analysis of variance and also write down the layout of one-way ANOVA with its assumptions and ANOVA table.

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