

This question paper contains 2 pages

Unique Paper Code : 32371302
Name of the Paper : Sample Survey and Indian Official Statistics
Name of the Course : B.Sc. (Hons.) Statistics under CBCS
Semester : III
Duration : 3 hours
Maximum Marks : 75 Marks

Instructions for Candidates

Attempt FOUR questions in all. All questions carry equal marks.

1. Describe the best probability sampling scheme with example, suitable for the situation when values of successive units in the population follow a linear trend to estimate population means. Establish your justification.
2. What is the difference between systematic sampling and cluster sampling? Under the condition that intra cluster correlation coefficient between the elements within cluster is negative value, comment on the relative efficiency of cluster sampling compared with simple random sampling. ~~Establishing establishing~~ all results required ~~for to justify~~ your comment. Also comment on the result when intraclass correlation coefficient takes minimum value.
3. A sampler proposes to take a stratified random sample. He expects that his field cost will be of the form $\sum c_i n_i$. His advance estimates of relevant quantities for the two strata are as follows:

Stratum	P_i	S_i^2	C_i
1	0.4	100	\$4
2	0.6	400	\$9

Find the values of n_1/n and n_2/n that minimize the total field cost for a given value of $V(\bar{y}_{st})$. Find the sample size required under this optimum allocation, to make $V(\bar{y}_{st})=1$. (ignore the fpc). How much will be the total field cost?

4. If there is a linear relationship between the response y (characteristic under study) and an auxiliary variable x such that when x=0 (assuming total population x is known) the value of y does not equal to zero, then name the best possible method of estimation to

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estimate population total. Also Stating the assumptions made, obtain bias and variance of the

estimate.

5.

How is the sample size related to the margin of error and confidence level? What is the impact of S.D. on sample size? Comments with justification. Also fill in the blanks showing necessary calculations in each case:

Margin of error	S.D.	Confidence Level	Sample Size
0.4274	5.33	95%	_____
0.8548	4.79	_____	209
0.7948	_____	90%	249
0.2129	5.79	_____	2841
_____	2.54	90%	3720

6. Name the organization which coordinates the statistical activities and maintains statistical standard in the country. Discuss the functions of its main divisions. What are the important determinants of quality of statistics. What is the objective of Conference of central and state statistical organisation? What was the theme of the last conference?

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