2609N547   Candidate's Seat No :_____

B.Sc Sem.-6 (Rep) Examination
CC 308
Statistics

Time : 2-30 Hours]   September-2024   [Max. Marks : 70

Q.1 (A)	Write detail note on simple random sample and explain different methods to draw a sample by using SRS techniques.	7
(B)	Prove that the probability of selecting a specified unit of the population at any given draw is equal to the probability of its being selected at the first draw in simple random sampling without replacement.	7
	OR	
(A)	Show that for SRSWOR ,sample mean is an unbiased estimate of population mean	7
(B)	Prove that E(p)=P and V(P)= $\frac{N-n}{N}\frac{PQ}{n}$	7
Q.2 (A)	Derive the variance of mean of the stratified random samples under random allocations.	7
(B)	Write a short note on "Estimation of sample size with continuous data while estimating population mean with proportional allocation."	7
	OR	
(A)	Derive the variance of stratified sampling using Neyman allocation.	7
(B)	Write a short note on "Relative precision of stratified random sampling and simple random sampling.	7
Q.3 (A)	Explain in detail systematic sampling Method.	7
(B)	Prove that the systematic random sample is having the same precision as corresponding stratified random sample with one unit per stratum if $\rho_{wst} = 0$.	7
	OR	
(A)	If the population consists of linear trend give the relationship between variance of stratified sampling, simple random sampling and systematic sampling.	7
(B)	Prove that the mean of systematic sample is more précised than mean of simple random sample if $S^2_{wsy} > S^2$. Where S^2_{wsy} = variance among units that lies within the systematic sample.	7
Q.4 (A)	In Two Stage Sampling, prove that:-$V(\hat{\theta}) = V_1[E_2(\hat{\theta})] + E_1[V_2(\hat{\theta})]$.	7
(B)	What is two stage sampling? Explain its merits and demerits.	7
	OR	
(A)	Discuss the variance of sample proportion in two stage sampling.	7
(B)	Explain: Sub sampling is regarded as incomplete sampling.	7
Q.5	**Attempt any Seven**	14
1.	Give any two name of Random Number Table used for drawing SRS.	
2.	Give the formula for V($\bar{y}$) for SRSWOR.	

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3.	Give any two situations where stratified sampling is useful.	
4.	Give the confidence limits for population mean and population total for stratified random sampling.	
5.	Give any two merits of using Systematic Sampling.	
6.	Give any two demerits of using Systematic Sampling.	
7.	How many possible sample of size n can be drawn from population of size N without replacement?	
8.	Is systematic random sampling more précised than the two stage sampling?Justify your answer.	
9.	In which sampling method, Probability of drawing a unit at each selection remains same.	
10.	What is the appropriate sampling procedure, when an investigator wants a sample containing m units which possess a rare attribute?	
11.	Give the formula of Finite Population Correction if the sample of size n is drawn from population of size N.What is sub sampling?	
12.	When two stage sampling reduces to a single stage sampling?	

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