



UNIVERSITY OF THE PUNJAB

Fifth Semester – 2019

Examination: B.S. 4 Years Program

Roll No.

PAPER: Sampling Techniques (Theory)

Course Code: STAT-305 Part – II

MAX. TIME: 2 Hrs. 45 Min.

MAX. MARKS: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q. No. 2. Write a short note on the following: (4x5=20)

- i. Determination of Sample Size
- ii. Two way Stratification
- iii. Linear Systematic Sampling
- iv. Proportional Allocation in Stratified Random Sampling

Q. No. 3. Show that the variance of the estimate of population total $\hat{y} = N\bar{y}$ from a simple random sample is $V(\hat{y}) = N^2(1-f)\frac{S^2}{n}$. (07)

Q. No. 4. If the loss function due to an error in \bar{y} is $\lambda|\bar{y} - \bar{Y}|$ and the cost function is $C = C_0 + C_1n$, then show that the most economical value of 'n' in simple random sampling, ignoring finite population correction is $(\frac{\lambda S}{C_1\sqrt{2\pi}})^{2/3}$ (07)

Q. No. 5. If the terms in $\frac{1}{N_h}$ are ignored relative to unity, show that for estimated mean from stratified random sample of size n_h , (09)

$$V_{opt} \leq V_{prop} \leq V_{ran}$$

where the optimum allocation is for fixed 'n'.

Q. No. 6. Show that the mean of a systematic sample is more precise than the mean of a simple random sample if and only if $S_{wsy}^2 > S^2$ (07)