UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program : **Third Semester – Fall 2021**

Roll No. ……

Paper: Statistics-III **`Course Code: STAT-201** **Time: 3 Hrs. Marks: 60**

Q.1. Answer the following short questions: (15x2=30)

i. Differentiate between the terms population and sample.
ii. Define the term BIAS.
iii. Define the term STRATUM.
iv. Differentiate between Random Sampling and simple random sampling.
v. What is meant by proportional allocation?
vi. Is an estimator a random variable? Why or why not?
vii. Differentiate between point estimate and interval estimate.
viii. What do you know about consistent estimator?
ix. Define the term Alternative Hypothesis.
x. What is meant by Two Tailed Test?
xi. What do you know about Level of confidence?
xii. What is meant by Type II error?
xiii. What do you know about Rejection Region?
xiv. What is meant by the term Statistical inference?
xv. Write down any 2 properties of the F-distribution?

Answer the following questions. (5x6=30)

i. A population consisting of 1000 men has a height distribution with σ =3. Find the standard error of mean height for a random sample of 50 men selected
a) With replacement b) without replacement

ii. If x_1, x_2, x_3 is a random sample from a normal population with mean μ and variance σ^2 and $T_1 = \frac{X_1+2X_2+X_3}{4}$ and $T_2 = \bar{X}$ are the two estimators for μ, are these two estimators unbiased?

iii. A random sample of 25 hens from a normal population showed that the average laying is 250 eggs per year with a variance of 625 eggs. The company claimed that the average laying is at least 235 eggs per year. Test the claim of the company at α= 0.05.

iv. The following data gives paired yields of two verities of wheat. Each pair was planted in a different locality. Test the hypothesis that the mean yields are equal at α= 0.05.

Variety I:	45, 32, 58, 57, 60, 38, 47, 51, 42, 38
Variety II:	47, 34, 60, 59, 63, 44, 49, 53, 46, 41

v. A random sample of 30 values has a variance of 108.55. Test the hypothesis that the population variance (σ^2) is greater than 105 at α= 0.05.