



**OLUSEGUN AGAGU UNIVERSITY OF SCIENCE & TECHNOLOGY, OKITIPUPA**  
**SCHOOL OF SCIENCE, DEPARTMENT OF MATHEMATICAL SCIENCES**

**Name of examination: 2019/2020 B. Tech. Second Semester Examination**

**Code and Title of Paper: STA 202/ MTH 210 : Statistical Inference II**

**Date: 23<sup>rd</sup> August, 2021**

**Time: 2hrs**

**Instructions: Attempt Four Questions**

**QUESTION 1**

- a Discuss the following
  - i Types of Estimate
  - ii Confidence Interval
  - iii Confidence Limit.
- b List and Explain the properties of a Point Estimator

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**QUESTION 2**

- a Define Estimation and state it types
- b Suppose the proportion of families that have two more children want to be estimated. If a random sample of 144 families shows that 48 families have two or more children, Set up a 95% confidence interval estimate of the population proportion of families having two or more children.

**QUESTION 3**

- a Determine the sample for estimating the Population Mean
- b A car manufacturing company received a shipment of petrol filters. These filters are to be sampled to estimate the proportion that is unusable. From experience, the proportion of unusable filter is estimated to be 10%. How large a random should be taken to estimate the true proportion of unusable filters to which 0.07 with 99% confidence interval.

**QUESTION 4**

#### QUESTION 4

(a) Define Population Distribution

- b Given 0,2,4,and 6. List all possible samples of size 2 that can be drawn
- (i) with replacement
  - (ii) without replacement

#### QUESTION 5

- a What do you understand by Population Standard Deviation
- b Ten percent of machines produced by a company A are defective and five percent of those produced by company B are defective. A random sample of 250 machines are taken from company A and 300 samples from company B. Compute the combined Standard error.

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#### QUESTION 6

- a List and explain the properties of Sampling Distribution
- b The *personnel department* of an organization would like to estimate the *family dental expenses* of its employees to determine the feasibility of providing a *dental insurance plan*. A random sample of 10 employees reveals the following *family dental expenses* in the previous year.  
11,37, 25, 62, 51, 21, 18, 43, 32, 20.  
Set up a 90% confidence interval of the average family dental expenses for the employee of this Organization.

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