# MAASAI MARA UNIVERSITY

**REGULAR UNIVERSITY EXAMINATIONS 2020-2021 ACADEMIC YEAR**
**FOURTH YEAR FIRST SEMESTER**

**SCHOOL OF BUSINESS AND ECONOMICS**
**BACHELOR OF SCIENCE IN FINANCIAL ECONOMICS**

## COURSE CODE: BCM 3153
## COURSE TITLE: MANAGERIAL STATISTICS

**DATE:6 TH APRIL,2022**                    **TIME: 0230-0430HRS**

**INSTRUCTIONS TO CANDIDATES**
Question **ONE** is compulsory
Answer any other **THREE** questions

## QUESTION ONE
a) Differentiate between Point Estimate and Interval Estimate **(3 Marks)**
b) Using diagrams to support your reasoning, clearly explain each of the following properties of an Estimator

       i. Estimator Business **(4 Marks)**
       ii. Minimal Variance **(4 Marks)**

c) Differentiate between Parametric and non-Parametric tests and give two advantages of parametric tests over non-parametric tests. **(4 Marks)**
d) Using a diagram clearly explain the circumstances under which the following are used:
(i) Z-test
(ii) Student –t distribution test **(5 Marks)**
e) Give three assumptions of ANOVA and give reason why cannot just use the test of difference in population means comparing the population means two at a time, instead of ANOVA. **(5 Marks)**

## QUESTION TWO
Organization X has six production employees in total. The hourly earnings of each of the employees in Kenya shillings is given as per the table below:-

| Employee | Hourly earnings |
|----------|-----------------|
| A | 50 |
| B | 60 |
| C | 70 |
| D | 80 |
| E | 90 |
| F | 100 |

Required:
a. Determine the population mean earning **(2 Marks)**
b. Construct the sampling distribution of the mean earning for a sample of size two given the sampling is done without replacement **(5 Marks)**
c. Find the mean of the sample means **(3 Marks)**
d. Determine the standard error **(3 Marks)**
e. Assuming sampling was done with Replacement, what would be the sample size **(2 Marks)**

## QUESTION THREE
Given a table showing site type and pottery type for a random sample of 628 schools at a given project as below:-

| SITE TYPE | POTTER TYPE | | |
|-----------|---|---|---|
| | A | B | C |
| Mesa top | 75 | 61 | 53 |
| Cliff-talus | 81 | 70 | 61 |
| Canyon bench | 92 | 68 | 66 |

Using chi-square test, determine if site type and pottery type are independent at 0.01 level of significance. **(15 Marks)**

## QUESTION FOUR

A real estate developer is considering investing in a shopping Mall on the outskirts of a Nairobi. Three parcels of land are being evaluated of particular importance is the income in the area surrounding the proposed Mall.

A random sample of four families is selected near each proposed Mall.

Following are the sample results in tens of thousands of Kenya shillings.

| Southern Region | Western Region | Eastern Region |
|---|---|---|
| 34 | 44 | 45 |
| 38 | 41 | 50 |
| 40 | 39 | 46 |
| 30 | 40 | 48 |

At 0.05level of significance, can the developer conclude that there is a difference in the mean?

(**15 Marks**)

## QUESTION FIVE

Peter is the owner of a given Gas Company.

Peter would like to estimate the mean number of gallons of gasoline sold to his customers.

Assume the number of gallons sold follow the normal distribution with a standard deviation of 2.30 gallons.

From his records Peter selects a random sample of 60 sales and finds the mean numberof gallons sold is 8.60.

Required:

  a. Determine the point estimate of the population mean (**3 Marks**)
  b. The standard error of the mean         (**4 Marks**)
  c. Develop a 99% Confidence interval for the population mean and interpret your answer

(**8 Marks**)

**END//**