# TECHNICAL UNIVERSITY OF MOMBASA

School of Business

Department of Management Science

## UNIVERSITY EXAMINATION FOR:

DIPLOMA IN PROCUREMENT AND MATERIALS MANAGEMENT

DIPLOMA IN FRONT OFFICE OPERATIONS & CUSTOMER CARE

DIPLOMA IN LOGISTICS AND TRANSPORT MANAGEMENT

DIPLOMA IN SALES & MARKETING MANAGEMENT

DIPLOMA IN HUMAN RESOURCE MANAGEMENT

DIPLOMA IN BUSINESS ADMINISTRATION

DIPLOMA IN BUSINESS MANAGEMENT

DIPLOMA IN ACCOUNTANCY

DIPLOMA IN SHIPPING

BAC 2103: BUSINESS STATISTICS

END OF SEMESTER EXAMINATION

**SERIES:** APRIL SERIES

**TIME:** TWO HOURS

**DATE:** APRIL 2022

**Instructions to Candidates**

You should have the following for this examination

*-Answer Booklet, examination pass and student ID*

This paper consists of **FIVE** questions. Attempt question **ONE** (Compulsory) & any other **TWO** questions.

**Do not write on the question paper.**

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**QUESTION ONE**

***a)*** Distinguish between:-

***i)*** Descriptive statistics and inferential statistics. **(4 marks)**

***ii)*** Primary data and secondary data. **(4 marks)**

***b)*** Highlight **FIVE** main features of a good questionnaire**.** **(5 marks)**

***c)*** National income sector figures of a country for 3 years are given in the following table:-

| *National Income (Sh. Millions)* | | | | |
|---|---|---|---|---|
| ***Year*** | ***Agriculture*** | ***Manufacturing*** | ***Tourism*** | ***Total*** |
| ***2015*** | 170 | 90 | 80 | 340 |
| ***2016*** | 190 | 120 | 90 | 400 |
| ***2017*** | 200 | 140 | 120 | 460 |

Required draw:

***i)*** a simple bar chart **(2 marks)**
***ii)*** a component bar chart **(3 marks)**
***iii)*** a multiple bar chart **(3 marks)**

***d)*** Calculate the ***arithmetic mean, median*** and ***mode*** from the following data.

| ***Marks*** | **51** | **52** | **53** | **54** | **55** | **56** | **57** | **58** | **59** | **60** |
|---|---|---|---|---|---|---|---|---|---|---|
| ***No. of Students*** | 10 | 12 | 11 | 18 | 18 | 17 | 16 | 10 | 8 | 2 |

**(9 marks)**

**QUESTION TWO**

***a)*** The table shows the recorded wingspans, in meters, of 100 endangered vultures (birds).

| ***Wingspan w, (m)*** | **$1.0 \leq w < 1.5$** | **$1.5 \leq w < 2.0$** | **$2.0 \leq w < 2.5$** | **$2.5 \leq w < 3.0$** | **$3.0 \leq w < 3.5$** |
|---|---|---|---|---|---|
| ***Frequency (f)*** | 4 | 20 | 37 | 28 | 11 |

Required:-

Estimate the values of:

***i)*** ***Quartile deviation***
***ii)*** ***$5^{th}$ Deciles***
***iii)*** ***$75^{th}$ Percentile*** **(10 marks)**

***b)*** The following are sales ***(Sh.000)*** *of M&M Enterprise* for the years 2020 and 2021:-

| | ***2020*** | ***2021*** |
|---|---|---|
| ***January*** | 40 | 42 |
| ***February*** | 48 | 45 |
| ***March*** | 42 | 60 |
| ***April*** | 58 | 64 |
| ***May*** | 60 | 58 |
| ***June*** | 80 | 70 |
| ***July*** | 75 | 80 |
| ***August*** | 60 | 75 |
| ***September*** | 55 | 60 |
| ***October*** | 50 | 48 |
| ***November*** | 60 | 55 |
| ***December*** | 90 | 95 |

Required:-

Construct a ***Z-Chart*** for the year 2021. **(10 marks)**

**QUESTION THREE**

***a)*** The noise levels at 30 locations near an outdoor concert venue were measured to the nearest decibel. The data collected are shown in the grouped frequency table:-

| ***Noise (decibels)*** | **$65 \leq d < 69$** | **$70 \leq d < 74$** | **$75 \leq d < 79$** | **$80 \leq d < 84$** | **$85 \leq d < 89$** | **$90 \leq d < 94$** |
|---|---|---|---|---|---|---|
| ***Frequency (f)*** | 2 | 4 | 6 | 6 | 8 | 4 |

From the following distribution, compute:-

***i)*** the mean **(2 marks)**
***ii)*** the median **(3 marks)**
***iii)*** the mode **(3 marks)**
***iv)*** the standard deviation **(4 marks)**

***b)*** From the following frequency distribution table:-

| *Marks* | *No. of students* |
|---|---|
| **0-10** | 7 |
| **10-20** | 12 |
| **20-30** | 9 |
| **30-40** | 18 |
| **40-50** | 15 |
| **50-60** | 20 |
| **60-70** | 16 |
| **70-80** | 13 |
| **80-90** | 10 |
| **90-100** | 4 |

Required:-

***i)*** Draw a histogram and superimpose frequency polygon. **(5 marks)**

***ii)*** From the histogram, find the value of the mode**.** **(3 marks)**

**QUESTION FOUR**

***a)*** Explain briefly **FOUR** sampling techniques as used in statistics**.**

**(8 marks)**

***b)*** From the following data, calculate index numbers for the year 2015 taking 2014 as the base year and using the following formulae:-

***i)*** *Laspeyre's*
***ii)*** *Paasche's*
***iii)*** *Fisher's*
***iv)*** *Marshall-Edgeworth*

| | ***2014*** | | ***2015*** | |
|---|---|---|---|---|
| | ***Price (Shs)*** | ***Quantity (Kgs)*** | ***Price (Shs)*** | ***Quantity (Kgs)*** |
| ***Maize*** | 650 | 200 | 1350 | 300 |
| ***Sugar*** | 950 | 80 | 1600 | 70 |
| ***Rice*** | 1500 | 50 | 3200 | 80 |

**(12 marks)**

**QUESTION FIVE**

***a)*** Briefly explain **FOUR** sources of secondary data. **(8 marks)**

***b)*** In the study of a city, the population density, in *people/hectare*, and the distance from the city centre, in *km*, was investigated by picking a number of sample areas with the following results.

| ***Area*** | **A** | **B** | **C** | **D** | **E** | **F** | **G** |
|---|---|---|---|---|---|---|---|
| ***Distance (km)*** | 0.6 | 3.8 | 2.4 | 3.0 | 2.0 | 1.5 | 1.8 |
| ***Population density (people/hectare)*** | 50 | 22 | 14 | 20 | 33 | 47 | 25 |

Required:-

***i)*** Calculate the product moment correlation coefficient ***(r).*** **(10 marks)**

***ii)*** Interpret the relationship between distance *(km)* and population density *(people/hectare).* **(2 marks)**