



**NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY  
FACULTY OF APPLIED SCIENCES  
DEPARTMENT OF INFORMATICS**

**DATA VISUALISATION AND REPORTING  
SIA1203**

**SECOND SEMESTER 2024**

**This examination paper consists of 3 pages**

**Time Allowed:** 3 hours  
**Total Marks:** 100  
**Examiner's Name:** Mr W. Marabada

**INSTRUCTIONS**

1. Answer any four (4) questions.
2. Each question carries 25 marks.

**MARK ALLOCATION**

<b>QUESTION</b>	<b>MARKS</b>
1.	25
2.	25
3.	25
4.	25
5.	25
<b>TOTAL FOR FOUR QUESTIONS</b>	<b>100</b>

### QUESTION ONE

- a) Deliberate on the following:
- i. Pattern Recognition and Analysis methods [5]
  - ii. Pattern Mining [5]
  - iii. Applications of Pattern analysis [5]
- b) A student studying Data Analytics is interested in pursuing further studies in a science, technology, engineering and mathematics (STEM) career when leaving school. They are also interested in the popularity of STEM-related studies in Form 3 and Form 4 classes at their school. The student would like to collect some primary data about the numbers of students in STEM-related classes by going to each of the classes and counting the number of students in the class. State the appropriate method the student may use for collecting data and its associated advantages. [10]

### QUESTION TWO

- a) Highlight any five (5) major advantages of data visualization. [5]
- b) Discuss Human Visual System Model (HVS model) as it applies to Data Visualization. [10]
- c) Explain the main elements of a pie chart, and where it is most suitable for visualizing data. [10]

### QUESTION THREE

- a) Highlight the five(5) principles for effective report visualization. [10]
- b) Identify the major benefits of Animation in Data Visualization. [15]

### QUESTION FOUR

- a) What is the purpose of a legend in a chart or graph? [5]
- b) Explain the current trends in Data Visualization and Reporting. [10]
- c) Define outliers and discuss potential methods for handling them. [10]

### QUESTION FIVE

- a) Discuss any five(5) primary advantages of using interactive Data Visualisations. [10]
- b) A Sports Science athletics official has collected thousands of track and field event results for athletes all around Bulawayo in the last 10 years. This data has been collected from a range of data sets and then imported into a spreadsheet. Before the official can present findings using data visualisation, they will have to first cleanse the data. Explain why cleansing data is a necessary process during data manipulation and analysis. [15]