



## **MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY**

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### **University Examinations 2024/2025**

**FOURTH YEAR FIRST SEMESTER FOR THE DEGREE OF BACHELOR OF SCIENCE IN  
COMPUTER SCIENCE AND FORENSIC**

#### **CDS 3352/3252: DATA ANALYTICS AND VISUALIZATION**

**DATE: DECEMBER 2024**

**TIME: 2 HOURS**

**INSTRUCTIONS:** Answer question **ONE** (Compulsory) and any other **TWO** questions

#### **QUESTION ONE (30 MARKS)**

- a) Differentiate between data analysis and data analytics. (4 marks)
- b) Briefly outline process of data analytics as a cycle. (4 marks)
- c) Briefly explain main activities required while developing an effective visualization. (4 marks)
- d) Discuss any three measures that can be applied to improve data visualization tools. (6 marks)
- e) Discuss any three application of document classification as used in text analytics. (6 marks)
- f) Describe the following terms giving example in each case
  - i. Diagnostic analytics
  - ii. Predictive analytics(6 marks)

#### **QUESTION TWO (20 MARKS)**

- a) Discuss any three challenges of data visualization (6 marks)
- b) State the difference between
  - i. Text analysis and linguistic analysis (3 marks)
  - ii. Content understanding and content classification (3 marks)

c) Briefly explain components of data analysis process and illustrate how linear and cyclic analysis process differs. (8 marks)

### **QUESTION THREE (20 MARKS)**

(a) Briefly compare the following concepts. You may use an example to explain your point(s).

- Data mining and data warehousing
- Data cleaning, data transformation

(6 marks)

(b) Briefly explain process of developing effective visualization. (8 marks)

(c) Discuss any two big data processing tools; for each tool state its key features. (6 marks)

### **QUESTION FOUR (20 MARKS)**

a) Discuss any two text analysis methods and outline how they are applied in big data analytics. (4 marks)

b) Discuss main component of Hadoop ecosystem. (6 marks)

c) Discuss any two software components of data mining systems (4 marks)

d) The table below shows summary of grades attained in an examination. write a code in python or R programming language that will enable visualization of the same. (6 mark)

<b>SUMMARY</b>							
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>IC</b>	<b>TOTAL</b>
<b>TALLY</b>	<b>3</b>	<b>2</b>	<b>12</b>	<b>14</b>	<b>3</b>	<b>2</b>	<b>34</b>

### **QUESTION FIVE (20 MARKS)**

a) Discuss any three statistical aspects of Big Data (6 marks)

b) Briefly explain why text analysis is considered to be very difficult and outline how that can be addressed. (4 marks)

c) Briefly discuss any two text analysis tools. (4 marks)

d) Discuss stages of text analysis outlining results of each. (6 marks)