



Strathmore
UNIVERSITY

**SCHOOL OF COMPUTING AND ENGINEERING SCIENCES
MASTER OF SCIENCE IN SUSTAINABLE ENERGY TRANSITIONS
END OF SEMESTER EXAMINATION
MSSET 8503: BIG DATA & INTERNET OF THINGS**

DATE: 8th December 2023

Time: 18:00-20:30 Hours

Instructions

1. This examination consists of **FOUR** questions.
2. Answer Question ONE (**COMPULSORY**) and any other TWO questions.

Question One [20 Marks]

- a) Explain the significance of sensors and actuators in IoT-based applications. **[4 Marks]**
- b) Explain why most micro-controller units are based on the RISC strategy. **[5 Marks]**
- c) Describe the ETL process as used in Big Data. **[5 Marks]**
- d) Using examples, discuss at least 3 types of analytics that can be applied on Big Data. **[6 Marks]**

Question Two [15 Marks]

- a) Explain the concept of Big Data management. **[2 Marks]**
- b) Using an example, illustrate what a data warehouse is. **[3 Marks]**
- c) Briefly discuss the Hadoop ecosystem. **[10 Marks]**

Question Three [15 Marks]

- a) Explain the IoT concept. **[3 Marks]**
- b) Using real-life examples, show why it may be important to standardize IoT protocols. **[4 Marks]**
- c) Discuss at least 4 types of IoT protocols. **[8 Marks]**

Question Four [15 Marks]

- a) Explain the concept of interactive analytics. **[2 Marks]**
- b) Using a sample data set, illustrate interactive analytics. **[5 Marks]**
- c) Using an example, illustrate a Big Data pipeline. **[8 Marks]**