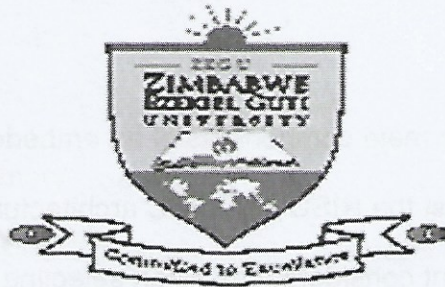


ZIMBABWE EZEKIEL GUTI UNIVERSITY



FACULTY OF SCIENCE, TECHNOLOGY, AGRICULTURE AND FOOD SYSTEMS
DEVELOPMENT

DEPARTMENT OF INFORMATION SYSTEMS

EXAMINATION PAPER

COURSE CODE: BIS223
COURSE TITLE: EMBEDDED SYSTEMS
SPECIAL REQUIREMENTS: NONE
LEVEL: 2
EXAM DURATION: 3 hours
DATE: APRIL 2024

11 APR 2024

INSTRUCTIONS TO CANDIDATES:

1. Answer any **four** questions
2. Number your answers accordingly
3. Start each question on a new page

Question 1

- a) State and explain the main components of an embedded system? [6 marks]
- b) Compare and contrast the RISC and CISC architectures [10marks]
- c) List any four important considerations when selecting a processor [4 marks]

Question 2

- a) Discuss the following registers:
 - i) Accumulator
 - ii) Program counter
 - iii) Instruction register [6 marks]
- b) Give a detailed outline of the interrupt system organization in an Intel 8085 microprocessor [14marks]

Question 3

- a) Give a detailed outline of the evolution of microprocessors to microcontrollers [10marks]
- b) Explain the following:
 - i) Machine cycle
 - ii) Instruction cycle [6 marks]
- a) Define the following terms:
 - i) System
 - ii) Embedded system [4 marks]

Question 4

- a) What characteristics should a system have in order for it to be classified as an embedded system? [2 marks]

- b) Explain the following:
- i) Instruction set [3 marks]
 - ii) Pipelining [3 marks]
 - iii) Cache memory [3 marks]
 - iv) Co-processing [3 marks]
- c) Explain in detail what determines the power of any processor [6 marks]

Question 5

- a) Compare and contrast an Embedded Systems and a General Computing Systems [10 marks]
- b) Embedded system is in constant interaction with the real world through the use of sensors and actuators
- i) What is the use of sensors in an embedded system [2 marks]
 - ii) What is the use of actuators in an embedded system [2 marks]
- c) List any 6 input/output devices that found in a typical embedded system [6 marks]