MANICALAND STATE UNIVERSITY OF APPLIED SCIENCES

FACULTY OF ENGINEERING, APPLIED SCIENCES AND TECHNOLOGY

DEPARTMENT: COMPUTER SCIENCE AND INFORMATION SYSTEMS

MODULE: MICROPROCESSOR AND EMBEDDED SYSTEMS

CODE: BCOS 222

SESSIONAL EXAMINATIONS
APRIL-2024

DURATION: 3 HOURS

EXAMINER: MR MUZENDA A.C

INSTRUCTIONS

1. *Answer Any 4* ***questions***.
2. *Start a new question on a fresh page*
3. *Total marks 100*

Additional material(s): *None*

Question 1

a. Give a detailed outline of the evolution of the microprocessor to microcontrollers. [10]

b. Describe the internal architecture of the Intel 8085 microprocessor. [15]

Question 2

a. Give a detailed outline of the interrupt system organization in an Intel 8085 microprocessor. [13]

b. Compare and contrast the Intel 8085 microprocessor and the Motorola MC 6800 microprocessor. [12]

Question 3

a. Explain the following, including all registers involved;

i) fetch cycle [6]

ii) Instruction cycle [6]

b. Explain what determines the power of a processor. [6]

c. Discuss the following registers:

i) Accumulator [3]

ii) Program counter [4]

Question 4

a. Write an assembly language program to add 32H and 41H and store the result in register HL. [4]

b. Give a detailed account of the following types of memory:

i) EPROM ; [3]

ii) EEPROM; and [3]

iii) MASKED ROM [3]

c. i. Discuss the key considerations when selecting a microprocessor for an embedded system application. [6]

ii. Explain the factors influencing your decision, and provide examples to illustrate your points in (i) above. [6]

Question 5

a. Discuss the concept of interrupts in embedded systems and explain how do microprocessors handle interrupts. Provide examples of situations where interrupts are useful. [15]

b. Describe the basic steps involved in developing an embedded system application. [10]

Question 6

a. Distinguish between the general-purpose microprocessor and the microcontroller. [6]

b. Explain with the aid of a diagram the basic structure of an embedded system. [10]

c. Describe the boot process of an embedded system when power is applied to a microprocessor-based system. [9]

END OF EXAMINATION