



MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

SECOND YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

SCO 209: MICROPROCESSOR AND ASSEMBLY LANGUAGE PROGRAMMING

DATE: 23/11/2020

TIME: 8.30-10.30 AM

INSTRUCTIONS

Answer question ONE and any other TWO questions.

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) Describe the Tri-state logic as used in a microprocessor. (3 marks)
- b) Distinguish between High order and Low order Registers in 8085. (2 marks)
- c) Diana decided to study the types of buses in 8085 Microprocessor. Discuss the THREE types of buses she came across. (3 marks)
- d) Distinguish between The **Hlt** and **Hold** States. (3 marks)
- e) Using a suitable diagram explain the flags in the register format of 8085 microprocessor. (5 marks)
- f) Differentiate between maskable interrupts and Non-maskable interrupts. (4 marks)
- g) Write an assembly language program to add 10 data bytes. Data is stored in memory location starting from 4460H. The result is 8 bits only and is stored in 4480H. (10 marks)

QUESTION TWO (20 MARKS)

- a) Explain THREE advantages and TWO disadvantages of having more general-purpose registers in a Microprocessor. (5 marks)
- b) Briefly describe the steps involved in a fetch cycle. (5 marks)
- c) Write a program to add two-BCD numbers where starting address is **2000** and the numbers is stored at **2500** and **2501** memory addresses and store sum into **2502** and carry into **2503** memory address. (10 marks)

QUESTION THREE (20 MARKS)

- a) Outline FIVE registers in 8085 Microprocessor. (5 marks)
- b) Explain FIVE Addressing Modes of the 8085 microprocessor with the help of examples. (5 marks)
- c) Write an assembly language program for the 8085 microprocessor to find maximum and minimum of 10 numbers. (10 marks)

QUESTION FOUR (20 MARKS)

- a) State two uses of Accumulator in 8085 Microprocessor. (2 marks)
- b) Explain briefly what happens when the **Intr** signal goes High in 8085 Microprocessor. (3 marks)
- c) Outline FIVE various functional blocks of the 8085 Microprocessor. (5 marks)
- d) Write an assembly language program for calculating the sum of first n natural numbers using 8085 microprocessor. (10 marks)

QUESTION FIVE (20 MARKS)

- a) Define the following. (4 marks)
 - i. Pipelining
 - ii. Decoding
 - iii. Instruction format
 - iv. Execution time.
- b) Describe the Stack as used in 8085 Microprocessor. (2 marks)
- c) Distinguish between SIM and RIM instructions. (4 marks)
- d) Write an assembly language program to find smallest number between two numbers. (10 marks)