



MACHAKOS UNIVERSITY

University Examinations for 2020/2021 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

SECOND YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

SCO 209: MICROPROCESSOR AND ASSEMBLY LANGUAGE PROGRAMMING

DATE: 23/3/2021

TIME: 2:00 – 4:00 PM

INSTRUCTIONS

SECTION A IS COMPULSORY

ANSWER ANY TWO QUESTIONS IN SECTION B.

SECTION A (ALL QUESTIONS ARE COMPULSORY)

QUESTION ONE (30 MARKS)

- a) Define the following. (10 marks)
- i. Pipelining
 - ii. Decoding
 - iii. Instruction format
 - iv. Execution time.
 - v. Microprocessor
- b) Fred was asked to describe the steps involved in a fetch cycle by Erick. Describe the discussion that they had about the cycle. (10 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)

SECTION B (ANSWER ANY TWO QUESTIONS)

QUESTION TWO (20 MARKS)

- a) Diana decided to study the types of buses in 8085 Microprocessor. Discuss in detail the various types of buses you think she might have come across. (10 marks)
- b) What is your opinion and understanding of the Hlt and Hold States, additionally talk about the maskable interrupts and Non-maskable interrupts. (10 marks)

QUESTION THREE (20 MARKS)

- a) By use of a suitable diagram explain in detail the different types of the flags in the register format of 8085 microprocessor. (10 marks)
- b) Discuss how Stack is implemented in 8085 Microprocessor and write short notes to distinguish between SIM and RIM instructions. (10 marks)

QUESTION FOUR (20 MARKS)

- a) You are asked to give a discussion on 8085 Microprocessor registers. Discuss in detail the main registers that you will consider in your presentation and why. (10 marks)
- b) 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 FIVE (20 MARKS)

- a) While discussing more general-purpose registers in a Microprocessor, your colleague asks you to discuss THREE advantages and TWO disadvantages of having more general-purpose registers in a Microprocessor. (10 marks)
- b) Using detailed examples describe FIVE Addressing Modes of the 8085 microprocessors. (10 marks)