



MACHAKOS UNIVERSITY

University Examinations for 2021/2022

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

SECOND YEAR SPECIAL / SUPPLEMENTARY EXAMINATIONS FOR

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

BACHELOR OF SCIENCE MATHEMATICS AND COMPUTER SCIENCE)

SCO 209: MICROPROCESSOR AND ASSEMBLY LANGUAGE PROGRAMMING

DATE: 29/8/2022

TIME: 8.30-10.30 AM

INSTRUCTIONS:

Attempt Question One and Any Other Two questions in this paper

QUESTION ONE (30 MARKS)

- a) Discuss the function of instruction queue in 8086? [6 marks]
- b) List and explain the THREE methods of encoding as it's used in the computer Systems [6 marks]
- c) List and explain the TWO classifications of memory as its used in computing [4 marks]
- d) Explain REPEAT-UNTIL statements as it applies to assembly language programming [4 marks]
- e) What are the functions of bus interface unit (BIU) in 8086? [4 marks]
- f) Explain the meaning of the following terms as used in the processing power of the computer system [6 marks]
 - i. Program counter
 - ii. Instruction register
 - iii. Status register

QUESTION TWO (20 MARKS)

- a) Discuss the following types of status flags as it applies to processor executions [10 marks]
- i. Carry Flag(Cs)
 - ii. Sign Flag(S)
 - iii. Zero Flag(Z)
 - iv. Parity Flag(P)
 - v. Auxilarity carry flag(Ac)
- b) Calculate 74 in Hexadecimal as it's represented in number systems [5 marks]
- c) Computers systems differ greatly with human beings in the ways they read and interpret same kind of information, despite the complexity highlight some of the advantages and disadvantages of machine language [5 marks]

QUESTION THREE (20 MARKS)

- a) The Instruction of arithmetic group performs operation such as Addition, Subtraction, Increment or Decrement of the content of the register or memory depending on the instruction provided. With help of examples, explain the meaning of the following operations [10 marks]
- i. Add r
 - ii. ADD M
 - iii. ADC r
 - iv. ADC M
 - v. ADI data
- b) Describe the following languages as used in computing [6 marks]
- i. Machine languages
 - ii. Assembly languages
 - iii. Higher-level languages
- c) List the four segment registers found in the 8086 Microprocessor [4 marks]

QUESTION FOUR (20 MARKS)

- a) List out the five categories of the 8085 instructions. Give examples of the instructions for each group. [10 marks]

- b) Discuss the following ADDRESSING MODES OF 8085 processors [10 marks]
- i. Direct addressing mode
 - ii. Register addressing mode
 - iii. Register addressing mode
 - iv. Immediate addressing mode
 - v. Implicit addressing mode.

QUESTION FIVE (20 MARKS)

- a) Discuss the THREE types of instructions of the Intel 8085 processor [9 marks]
- b) Difference between microprocessor and microcontroller as it's used in assembly language programming [8 marks]
- c) List the THREE generations of the High Level Languages [3 marks]