



MACHAKOS UNIVERSITY

University Examinations for 2020/2021 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

FIRST YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR
BACHELOR OF SCIENCE (MATHEMATICS AND COMPUTER SCIENCE)

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

SCO 104: COMPUTER ORGANIZATION AND ARCHITECTURE I

DATE: 25/3/2021

TIME: 8.30-10.30 AM

INSTRUCTION: Answer Question ONE and any other TWO Question

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) Differentiate between (10 marks)
- Logical and physical addresses
 - a byte and a word
 - a RAM and a ROM
 - Assembly language and machine language
 - Computer organization and computer architecture
- b) Draw the structure of CPU with regard to internal structure of a computer. (6 marks)
- c) Discuss any three possible causes of interrupts. (6 marks)
- d) Outline how the ALU will perform the operations; 111 - 110 (3 marks)
- e) List the major parts of I/O module (5 marks)

QUESTION TWO (20 MARKS)

- a) Draw memory hierarchy diagram showing clearly the fastest and slowest, most and least expensive, smallest and largest (8 marks)
- b) Fill the table below (6 marks)

Decimal	Binary	BCD	Hexadecimal
1			
2			
3			
	0100		
			0101

- c) Describe Bus arbitration (6 marks)

QUESTION THREE (20 MARKS)

- a) Identify the function of any four types of special registers (8 marks)
b) Describe virtual memory (5 marks)
c) Draw a well labelled diagram of a computer (7 marks)

QUESTION FOUR (20 MARKS)

- a) Using a well labelled diagram, explain the internal organization of control unit (6 marks)
b) Explain four methods of accessing the computer memories (8 marks)
c) Describe the following I/O techniques (6 marks)
 i. Programmed I/O
 ii. DMA

QUESTION FIVE (20 MARKS)

- a) Draw a three bus structure (6 marks)
b) Computer engineers are found in a dilemma to have large storage and fast efficient memory. Explain how this problem has been solved. (10 marks)
c) Explain instruction pipelining (4 marks)