

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

FIRST YEAR EXAMINATION FOR THE AWARD OF
DIPLOMA IN COMPUTER SCIENCE

COSC 0110: COMPUTER ARCHITECTURE

STREAMS: DIP. COMP SCI (Y1S1)

TIME: 2 HOURS

DAY/DATE: THURSDAY 01/04/2021

2.30 P.M. – 4.30 P.M

INSTRUCTIONS:

- Answer question **ONE** and **TWO** other questions
- Do not write anything on the question paper
- This is a **closed book exam**, No reference materials are allowed in the examination room
- There will be **NO** use of mobile phones or any other unauthorized materials
- Write your answers legibly and use your time wisely.
- Marks are awarded for clear and concise answers.

SECTION A (ANSWER ALL QUESTIONS IN THIS SECTION)

QUESTION ONE (30 MARKS)

- List and briefly describe the main structural components of the central processing unit in a digital computer [4 marks]
- Define the following terms
 - Computer architecture [2 marks]
 - Instruction set [2 marks]
- Convert the following binary numbers to their decimal equivalents:
 - 001100 [2 marks]
 - 011100 [2 marks]
- Discuss two trends in the design of computers [4 marks]
- State four differences between ASCII and UNICODE [4 marks]

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- f. Parity checking is one of the mechanisms used to detect error codes, discuss two types of parity bits [4 marks]
- g. Discuss two pipelining hazards [4 marks]
- h. State four output devices [2 marks]

SECTION B (ANSWER ANY TWO QUESTIONS)

QUESTION TWO (20 MARKS)

- a) Differentiate between Impact and Non-impact printers and give an example for each [4 marks]
- b) By the aid of a diagram, explain the internal structure of stored program computers [6 marks]
- c) Discuss the parts of an instruction code and state Four examples of instructions in an instruction set [6 marks]
- d) State 4 characteristics of SISD computer systems [4 marks]

QUESTION THREE (20 MARKS)

- a)
 - i. Discuss the two types of Random Access memory [4 Marks]
 - ii. State two differences between the types of Random Access memory [2 marks]
- b) Discuss different types of interrupts in FETCH CYCLE? [4 marks]
- c) With the aid of a diagram, describe the processor's fetch execute instruction cycle [6 marks]
- d) Differentiate between RAM and ROM in regard to the main memory [4 marks]

QUESTION FOUR (20 MARKS)

- a) Discuss four types of addressing modes in a digital computer [8 marks]
- b) The CPU contains a number of registers, discuss two of them [4 marks]

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- c) Give two differences between SRAM and DRAM [4 marks]
- d) Explain three logic gates used in arithmetic logic unit [4 marks]

QUESTION FIVE (20 MARKS)

- a) Discuss three types of errors that occur in data transmission from transmitter to receiver [6 marks]
 - b) Discuss the steps followed to execute an instruction in the CPU putting into consideration the registers. [10 marks]
 - c) Name four error detection mechanism [4 marks]
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