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(*University of Choice*)

MASINDE MULIRO UNIVERSITY OF

SCIENCE AND TECHNOLOGY

(MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS

2022/2023 ACADEMIC YEAR SEMESTER 2

FOR THE DIPLOMA

IN

INFORMATION TECHNOLOGY

COURSE CODE: DIT 095

COURSE TITLE: PLATFORM TECHNOLOGY

DATE: 12/04/2023 **TIME:** 8:00-9:30AM

INSTRUCTIONS TO CANDIDATES

Answer **QUESTION ONE** and **ANY OTHER TWO** questions.

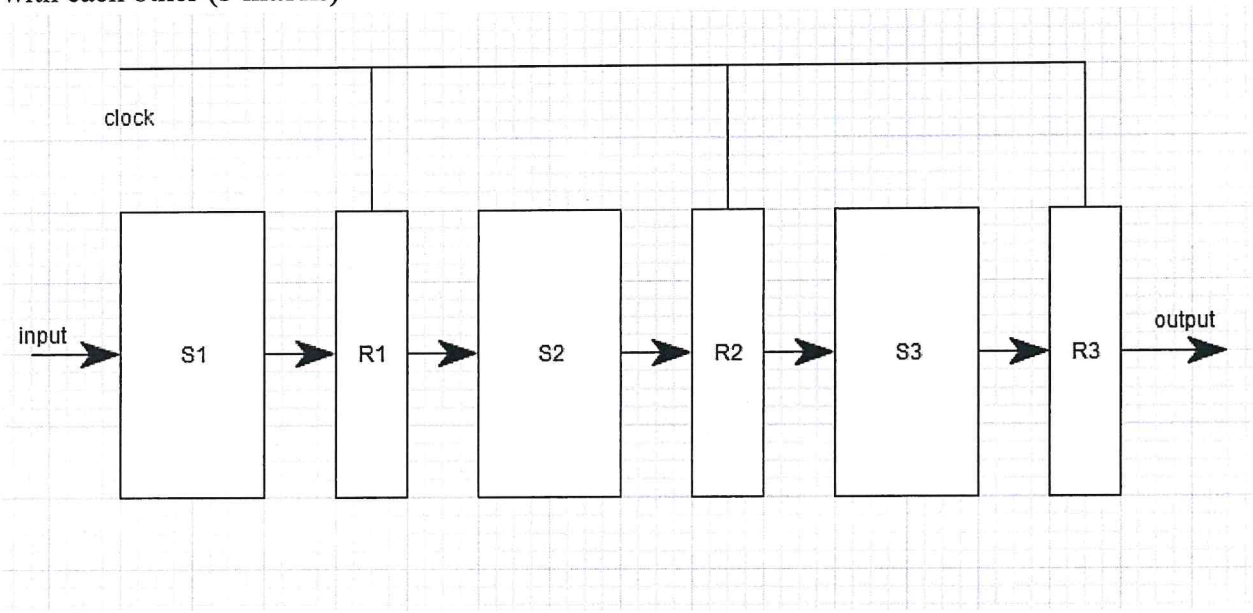
TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

QUESTION ONE (24 MARKS)

a. With an example, define the term computing platform as used in platform technology **(3 marks)**

b. The following diagram shows how a pipeline is implemented in computer processor. By using a car manufacturing industry as an example, explain how the parts shown interact with each other **(5 marks)**



c. Explain the four main features of RISC **(4 marks)**

d. Differentiate between arithmetic pipeline and instruction pipeline **(4 marks)**

e. Use radix representation to convert the hexadecimal number 1AF1.011 into its equivalent octal. **(4 marks)**

f. Use laws of Boolean algebra to show that AB'C+AB'D'=AB'(D+D')=AB' **(4 Marks)**

QUESTION TWO (18 MARKS)

a. Mary was listing the power requirements of a computer device under her care. The following is the list:

Mid End CPU (Intel Core i5)	95 W
Mid End Motherboard	40 W
RAM Modules x 2	_ W
Low End Graphics Card (Under $125)	86 W
Solid State Drive	3 W
3.5" Hard Disk Drive	_ W
DVD-RW Drive	27 W
Case Fans x 2	_W

i. With reasons state the most appropriate type of computer it is **(3 marks)**

ii. Fill in the missing wattage of RAM and Fans **(3 marks)**

b. Flynn's Classical Taxonomy Distinguishes multi-processor architecture by instruction and data. List the four classifications proposed by the taxonomy **(4 marks)**

c. Explain the concepts of Flynn's Taxonomy on MIMD processors. **(4 marks)**

d. By use of a diagram explain the various stages of process states as invoked by the OS **(4 marks)**

QUESTION THREE (18 MARKS)

a. Memory management is one of the functions of the operating system. Briefly explain **four** memory management requirements **(4 marks)**

b. Explain the similarities between Windows and Unix-like operating systems **(4 marks)**

c. Explain a brief historical development of computer hardware stating the contribution of Charles Babbage **(4 marks)**

d. Using a diagram explain how an attached array processor improves the efficiency of a computer system. **(6 marks)**

QUESTION FOUR (18 MARKS)

VHDL is one of the commonly used Hardware Description Languages (HDL) in digital circuit design.

a. Draw a general structure of a simple digital circuit of VHDL **(4 Marks)**
b. Write a simple program to show the input and output ports of the circuit above **(6 marks)**
c. Describe what each line of the above program does **(5 marks)**
d. List any three examples of gadgets where the above description language is applied **(3 marks)**

QUESTION FIVE (18 MARKS)

a. Pipelining has been applied effectively in computer processors.
   i. Define the term pipelining **(2 marks)**
   ii. State its importance in computing **(2 marks)**
   iii. Differentiate between linear and synchronous pipelining **(4 marks)**

b. State four problems associated with pipelining **(4 marks)**
c. You have been given a computer with the following type of Vector (array) processor. By stating which type of array processor it is, explain how it improves the performance of this type of computer **(6 marks)**