



FINAL EXAMINATION
DIPLOMA IN COMPUTER SCIENCE

COURSE	: COMPUTER ORGANIZATION AND ARCHITECTURE
COURSE CODE	: ARC1033
DURATION	: 2 HOURS

INSTRUCTIONS TO CANDIDATES :

1. This question paper consists of TWO (2) parts : PART A (10 questions)
: PART B (3 questions)
2. Answer ALL questions in the answer booklet provided.
3. Do not bring any material into the examination hall.
4. Please write your answer using permanent ink.

**MYKAD/
PASSPORT NO** : _____

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LECTURER : _____

SECTION : _____

DO NOT OPEN THIS QUESTION PAPER UNTIL YOU ARE TOLD TO DO SO

This question paper consists of 4 printed pages including the front page.

PART A

Match the terms provided with the definitions.

Analog Computer	Microcomputer	Supercomputer	Digital Computer
Mainframe	Central Processing Unit (CPU)	Register	
Arithmetic Logic Unit (ALU)	Bus	Hybrid Computer	

1.	The brain of a computer, containing all the circuitry needed to process input, store data, and output results.	
2.	The part of the CPU that handles all the calculations the CPU may need.	
3.	A complete computer on a small scale, designed for use by one person at a time.	
4.	The fastest high-performance systems used primarily for scientific and engineering work requiring exceedingly high-speed computations.	
5.	A communication pathway connecting two or more devices.	
6.	A quickly accessible location available to a computer's processor.	
7.	A computer that stores data in terms of digits (numbers) and can distinguish between just two values, 0 and 1, or off and on.	
8.	A large, expensive and very powerful computer with a huge capacity storage act as a server in a network environment.	
9.	Computers that can exhibit features of analog computers and digital computers.	
10.	A computer that represents data in terms of physical measures or quantities and proceeds along a continuum constituted by its components.	

(Total : 20 marks)

PART B

STRUCTURED

QUESTION 1

- a. Draw steps involved in CPU instruction cycle. (9 marks)
- b. Suppose we have the instruction Load 222, memory and register R1 as shown in Figure 1. Determine the actual value loaded into the accumulator for each addressing mode.

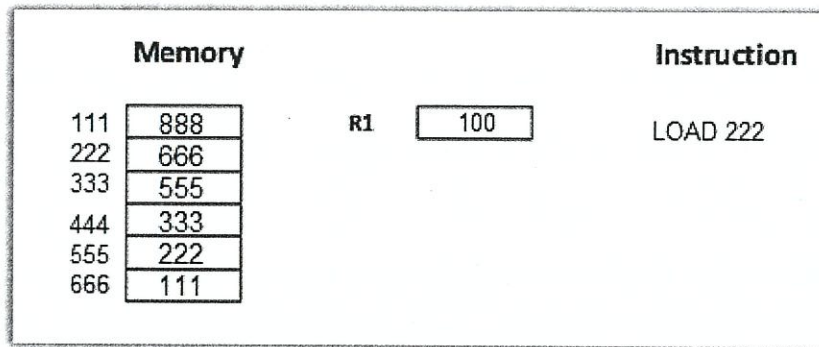


Figure 1

- i. Immediate addressing mode (2 marks)
- ii. Direct addressing mode (2 marks)
- iii. Indirect addressing mode (2 marks)
- c. Draw stacks diagram to represent this arithmetic expression $(a - b * c) / (d + e)$ by showing push and pop operations. (10 marks)

(Total : 25 marks)

QUESTION 2

- a. Briefly explain **TWO (2)** categories of peripheral devices and give **TWO (2)** examples for each of them. (8 marks)
 - b. Discuss **THREE (3)** types of I/O techniques in computer system. (9 marks)
 - c. Illustrate an Immediate Addressing diagram. (8 Marks)
- (Total: 25 marks)

QUESTION 3

- a. Define **FOUR (4)** main structural components of a computer. (10 marks)
 - b. Briefly explain **FOUR (4)** types of parallel processor systems. (14 marks)
 - c. Differentiate between Tightly Coupled and Loosely Coupled. (6 marks)
- (Total: 30 marks)

(TOTAL: 100 MARKS)

END OF QUESTION PAPER