ZIMBABWE EZEKIEL GUTI UNIVERSITY

FACULTY OF HEALTH, SCIENCE AND TECHNOLOGY

DEPARTMENT OF DIGITAL TECHNOLOGY

EXAMINATION PAPER

COURSE CODE	:	CDT 411
COURSE TITLE	:	Microprocessors and Microcontrollers
SPECIAL REQUIREMENTS	:	None
DURATION	:	3 Hours
LEVEL	:	**4.1**
DATE	:	07 OCT 2022

INSTRUCTIONS TO CANDIDATES:

1. Answer any 4 Questions from the whole paper.
2. The total Marks for the examination is 100.
3. The marks allocation for each question are indicated in square brackets[] .

QUESTION 1

a) Outline the features of the 8051 microcontroller [10]

b) Draw a clearly and neatly labelled block Diagram of 8051 microcontroller [10]

c) Explain **PUSH** and **POP** in relation to the 8051 stack [5]

[TOTAL MARKS: 25]

QUESTION 2

a) What is a microcontroller? [2]

b) Distinguish between a microcontroller and a microprocessor [10]

c) Describe the function of status signals in the 8085 microprocessor? [2]

d) Discuss the following registers

(i) Accumulator
(ii) Program Counter
(iii) H-L register pair [6]

e) List 5 examples of embedded systems [5]

[TOTAL MARKS: 25]

QUESTION 3

a) Where is the READY signal used? [2]

b) With a neat diagram, explain the Architecture of 8085 microprocessor? [15]

c) Explain the interrupt structure of 8085using the following pins?

(i) TRAP
(ii) RST 7.5
(iii)RST 6.5
(iv)RST 5.5
(v) INTR [5]

d) What are the different types of interrupts? [3]

[TOTAL MARKS: 25]

QUESTION 4

a) Explain the function of the following pins of 8085 microprocessor

i) ADO-AD7
ii) S0, S1
iii) RD
iv) INTR
v) INTA [10]

b) Copy and complete table below with the following operations **Write, Read, Fetch,** and **Halt.**

S1	S0	OPERATION
0	0	
0	1	
1	0	
1	1	

[8]

c) List the flags of 8085 microprocessor [5]

d) What is polling? [2]

[TOTAL MARKS: 25]

QUESTION 5

d) What is a reprogrammable system[3]

e) Differentiate between program execution with interrupt and program execution without interrupt with time use diagrams to illustrate your answer [6]

f) Explain what happens at each of the following steps

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LDA 4100H
MOV A, B
MOV A, M
CMP
RAL
RAR
```

[6]

g) Give 2 examples of each of the following different categories of instructions for the Intel 8085

i. Data Transfer instruction.
ii. Arithmetic instruction.
iii. Logical instruction.
iv. Branch instruction.
v. Machine control instruction [10]