UGANDA INSTITUTE OF COMMUNICATIONS ICT AND ENGINEERING

INFORMATION AND TECHNOLOGY DEPARTMENT

END OF YEAR ONE SEMESTER TWO EXAMINATIONS AY 2022/2023

PROGRAMME(S): DIPLOMA IN ELECTRONICS COMMNUNICATION ENGINEERING (DECE)

COURSE: INTRODUCTION TO MICROPROCESOR TECHNOLOGY

COURSE CODE : EEE122

DATE: SUNDAY 30TH, JULY 2023

TIME: 2:00 PM – 5:00 PM

DURATION: 3 HOURS

INSTRUCTIONS:

(i) This paper contains two Sections: A (40 marks) & B (60 marks).
(ii) Attempt ALL questions in Section A, and ONLY THREE questions in Section B.
(iii) All questions in Section B carry equal marks.
(iv) Credit will be given for use of relevant examples and illustrations.
(v) Begin each number in Section B on a new page of the answer sheet.
(vi) DO NOT write on this question paper.

INTRODUCTION TO MICROPROCESSOR TECHNOLOGY

SECTION A [40 MARKS]

Attempt **ALL** the Questions in this section

1. Intel 8085 is a _____ bit microprocessor.
   A. 4 bit B. 8 bit C. 16 bit D. 32 bit
2. _____ is the flip-flop which indicates some condition which arises after the execution of an arithmetic or logic instruction.
   A. Instruction register B. Temporary register
   C. Status flag D. None of these
3. The number of status flags in 8085 are:
   A. 5 B. 6 C. 8 D. 9
4. The first part of an instruction which specifies the task to be performed by the computer is called _____
   A. Opcode B. Operand C. Instruction cycle D. Fetch cycle
5. Identify all the non-maskable interrupt in the following
   A. RST4.5 B. RST5.5 C. RST6.5 D. RST 7.5
6. Which interrupt has the highest priority?
   A. RST4.5 B. RST5.5 C. RST6.5 D. RST 7.5
7. RIM is used to check whether----------?
   A. The write operation is done or not. B. The interrupt is masked or not.
   C. The read operation is done or not. D. A and B
8. The necessary steps carried out to perform the operation of accessing either memory or I/O Device, constitute a _____
   A. Fetch operation B. Execute operation
   C. Machine cycle D. Instruction cycle
9. The address bus flow in _____
   A. Bidirection B. Unidirection C. Multidirection D. Reverse
10. The content of accumulator before **CMA** instruction is A5H. After execution of instruction, its content is……
    A. A5H B. 5AH C. AAH D. 55H
11. A step by step procedure used to solve a problem is called…….
    A. Operating system B. Algorithm
    C. Application Program D. None of the above

12. C programming is:
    A. An assembly language B. A third generation high level language
    C. A machine language D. None of the above

13. A single instruction in assembly program to clear the lower 4 bits of accumulator is…….

A. XRI 0FH B. ANI F0 H C. XRI F0H D. ANI 0FH

14. The instructions below were executed in a microprocessor, state the status of S, Z, CY flags after the execution of the instructions.

```
MVI A, A9H
MVI B, 57H
ADD B
ORA, A
```

A. 0,1,1 B. 0,1,0 C. 1,0,0 D. 1,0,1

15. The contents of accumulator after the execution of the following instructions will be

```
MVI A, B7H
ORA, A
RAL
```

A. 6EH B. 4FH C. EEH D. 6FH

16. Calculate the content of the accumulator after execution of following instructions.

```
MVI A, 07H
RLC
MOV B, A
RLC
RLC
ADD B
```

17. Define instruction cycle and machine cycle. **(2 marks)**
18. How many memory locations can be addressed by a microprocessor with 16 address lines? **(2 marks)**
19. Calculate the duration of T-state of the 8085 clock. **(2 marks)**
20. An instruction cycle takes 4 T-states, how long is this in seconds? **(2 marks)**

SECTION B [60 MARKS]

Attempt **ONLY THREE** Questions in this Section.

Question 1

a) Briefly explain the steps involved in a Fetch Cycle? **(5 marks)**
b) Draw a flow chart to illustrate Instruction cycle. **(5 marks)**
c) State four key differences between the **HLT** and **HOLD** States? **(10marks)**

Question 2

a) Describe the different types of data transfers possible in the 8085. **(5 marks)**
b) Give examples of corresponding instructions for each type. **(5 marks)**
c) Write a simple program to add the two numbers: 4AH and 9AH, **(5 marks)**
and show the status flags after executing the program. **(5 marks)**

Question 3

a) Describe the various functional blocks of the 8085 Microprocessor. **(10 marks)**
b) Explain the five addressing modes of the 8085 microprocessor, **(5 marks)**
giving clear examples of instructions for each mode. **(5 marks)**

Question 4

Briefly describe the role of Instruction set of the 8085 microcontroller **(20 marks)**

Question 5

a) Describe all the various registers of the 8085 microprocessor. **(10 marks)**
b) Is the program counter a register? Explain. **(5 marks)**
c) Is the stack pointer a register? Explain. **(5 marks)**