UGANDA INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

END OF SEMESTER EXAMINATIONS

DEPARTMENT	:	ICT
YEAR OF STUDY	:	ONE
SEMESTER	:	TWO
PROGRAMME	:	DIPLOMA IN ELECTRONIC COMMUNICATION ENGINEERING
COURSE	:	INTRODUCTION TO MICROPROCESSORS
COURSE CODE	:	EEE 122
DATE	:	SUNDAY, 30/6/2024
TIME	:	9:00 AM - 12:00 PM
DURATION	:	3 HOURS

INSTRUCTIONS:

i) Section A is compulsory
ii) Attempt Any three (3) questions in section B
iii) All questions carry equal marks
iv) Credit will be given for use of relevant examples
v) Begin each section b number on a new page of the answer sheet

SCETION A [40 MARKS]

Question: 1

(a) Define the following:

(i) Bus
(ii) Stress testing
(iii) House keeping
(iv) Addressing modes
(v) Flow chart
(vi) Hard ware
(vii) Capacity
(viii) Memory cell
(ix) Memory word
(x) Microns (@2 marks)

(b) Give two most common failure modes for digital ICs (2 marks)

(c) List some of the desirable documentation that may accompany a microprocessor system (2 marks)

(d) State Moore's Law (2 marks)

(e) Show the following binary numbers in their 1's and 2's complement. (@2 marks)

Number	1's Complement	2's Component
(i) 1000 1001	_____	_____
(ii) 1010 1110	_____	_____
(iii) 0101 0101	_____	_____
(iV) 1111 1011	_____	_____
(v) 1011 0100	_____	_____

(f) What are the two vital purposes served by a bus in a typical microprocessor system? (2 marks)

(g) Give any two major differences between microprocessors (2 marks)

SECTION B [60 MARKS]

QUESTION: 1

a) Explain the history of Microprocessors (5 marks)

b) Describe the special purpose registers (5 marks)

c) Discuss the characteristics of a microprocessor that determine the power of a microcomputer (5 marks)

d) Draw a block diagram of a basic microprocessor Architecture (5 marks)

QUESTION:2

a) Draw a block diagram of a microprocessor-based system and describe all the various blocks. (10 marks)

b) Differentiate between SRAM and DRAM. (5 marks)
c) Explain the different types of ROM. (5 marks)

QUESTION:3

e) With reference to microprocessors describe what you understand by the following: (10 marks)

i. Accumulator
ii. Program counter
iii. Address bus
iv. Data bus
v. General purpose registers.

f) Describe the booting process of a CPU. (5 marks)
g) Briefly explain any 5 features of the Intel 8085 microprocessors. (5 marks)

Question: 4

a) Explain the various components of Operating systems (7 marks)
b) Describe the characteristics of a microprocessor that determine the power of a microcomputer (8 marks)
c) Draw a well labeled pin diagram of the 8085A microprocessor unit (5 marks)

Question: 5

a) Explain data exchange using traditional design technique (5 marks)
b) Describe the software design procedure (5 marks)
c) Compare a microcontroller with a microprocessor (5 marks)
d) Describe the I/O Mapped decoding Technique (5 marks)

Question: 6

a) Explain the following:
   i. One Byte instructions (3 marks)
   ii. Two Byte instructions (3 marks)
   iii. Three Byte instructions (3 marks)
b) Describe the stack I/O and machine control instructions (5 marks)
c) Explain the eight techniques used in troubleshooting a microprocessor system (6 marks)

Question: 7

a) Explain the following self-test programs:
   i. ROM testing (4 marks)
   ii. RAM testing (4 marks)
b) Describe the evolution of the following microprocessors:
   i. Sixteen- Bit (4 marks)
   ii. Thirty Two- Bit (4 marks)
c) Explain the mode of operation of a signature analyzer (4 marks)