



ELIZADE UNIVERSITY, ILARA-MOKIN, ONDO  
STATE  
FACULTY OF ENGINEERING  
DEPARTMENT OF COMPUTER ENGINEERING

FIRST SEMESTER EXAMINATION, 2019/2020 ACADEMIC SESSION

COURSE TITLE: MICROPROCESSOR SYSTEM AND INTERFACING CONTROL  
SYSTEM

COURSE CODE: ECE 411

EXAMINATION DATE: FEBRUARY, 2020

COURSE LECTURERS: ENGR. ISAAC ELESEMOYO

A handwritten signature in black ink, enclosed in a rectangular box. The signature is cursive and appears to be 'I. Elesemo'.

HOD's SIGNATURE

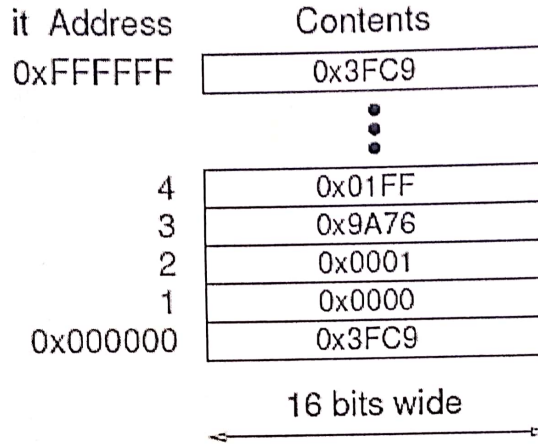
TIME ALLOWED: 3 HOURS

**INSTRUCTIONS:**

1. ANSWER FOUR QUESTIONS ONLY
2. SEVERE PENALTIES APPLY FOR MISCONDUCT, CHEATING, POSSESSION OF UNAUTHORIZED MATERIALS DURING EXAM.
3. YOU ARE **NOT** ALLOWED TO BORROW ANY WRITING MATERIALS DURING THE EXAMINATION.

**Question 1**

- a. Explain the function of the following:  
 i. IR    ii. MAR    iii. PC    iv. ALU    v. MDR.    [5 marks]
- b. In the figure shown below, what is the size of the address bus, data bus, MBR, MAR and IR when the opcode size is 8bits?    [5 marks]



- c. Write the code segment used by a microprocessor for fetching instruction    [5 marks]

**Question 2**

- a. Draw a well labelled Intel 8085 microprocessor.    [10 marks]
- b. What are the functions of  $IO/\overline{M}$ ,  $\overline{RD}$ ,  $\overline{WR}$ , VSS, VCC pins.    [5 marks]

**Question 3**

- a. Discuss computer system memory hierarchy and explain why the computer needs to utilize a memory hierarchy.    [5 marks]
- b. What is a ROM? Mention some of its applications.    [2 marks]
- c. What are the differences among EPROM, EEPROM and flash memory?    [2 marks]
- d. Mention the two types of semiconductor random access memory and how they differ from each other.    [6 marks]

**Question 4**

- a. What do you understand by interrupt?    [2 marks]
- b. List the type of interrupt.    [3 marks]
- c. Fill the table below    [5 marks]

Interrupt	Interrupt Vector address	Maskable or Non-Maskable
TRAP		
RST7.5		
RST6.5		
RST5.5		
INTR		

- d. An android phone receives a message alert when it is playing an audio, what is the effect of this alert of the audio player. What terminology can be used to explain this occurrence.    [2 marks]
- e. List three peripheral devices and how they can interrupt the activity of a processor.    [3marks]

**Question 5**

- a. Interface an IC 2764 with 8085 using NAND gate address decoder such that the address range allocated to the chip is 0000H – 1FFFH    [12 marks]

b. What is the difference between a microprocessor and a microcontroller? [3 marks]

**Question 6**

- a. Explain with illustration the make-up of the microprocessor system [8 marks]
- b. Given the following control codes for a three-bit control lines: 000, 001, 010, 011, 100, 101, 110, 111. What function will the ALU carry-out given these codes? [4 marks]
- c. Given the following expression in binary to the CPU, what output will the ALU return? [3 marks]
- |      |         |     |         |
|------|---------|-----|---------|
| i.   | 11010   | 010 | 10101   |
| ii.  | 1011    | 110 | 1000    |
| iii. | 1010110 | 000 | 1101101 |