



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

FIRST SEMESTER EXAMINATION, 2019/2020 ACADEMIC SESSION

COURSE TITLE: ASSEMBLY LANGUAGE PROGRAMMING

COURSE CODE: ECE 413

EXAMINATION DATE: FEBRUARY 2020

COURSE LECTURER: PROF A. O. OLUWATOPE

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HOD's SIGNATURE

TIME ALLOWED: 3 HOURS

INSTRUCTIONS:

1. ANSWER FOUR QUESTIONS ONLY, QUESTION SIX IS COMPULSORY.
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. Describe the basic concept of a microcomputer design [5 marks]
- b. Describe the instruction execution cycle of a microcomputer system [6 marks]
- c. Describe the FOUR steps involved in reading from microcomputer memory [2 marks]

QUESTION #2

- a. Describe the process of loading and execution of a program. [5 marks]
- b. Describe the following primary modes of operation of the x86 processor [2 marks]
 - i. Protected mode [2 marks]
 - ii. Real mode and [2 marks]
 - iii. System management mode [4 marks]
- c. Describe the 32-bit x86 processor general purpose registers

QUESTION #3

Describe the followings:

[15 marks]

- i. Segment registers
- ii. Flag registers
- iii. MMX registers
- iv. XMM registers
- v. Floating point registers

QUESTION #4

- a) Describe the Assemble-Link-Execute cycle [10 marks]
- b) Write x86 assembly program to add two numeric and store the addition in memory [5 marks]

QUESTION #5

- a. Write an x86 assembly program to implement the arithmetic expression given below:
 $A=(A+B)-C-D$ [7 marks]
- b. Write an x86 assembly program to sort the array of integers in ascending order of magnitude [8 marks]

300	200	450	350
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QUESTION #6

Write an x86 assembly program to compute the areas of right-angled triangles given the base and height dimensions using the following expression

$$\text{Area} = 0.5 * \text{Base} * \text{Height} \quad [15 \text{ marks}]$$