

**CROSS RIVER UNIVERSITY OF TECHNOLOGY, CALABAR**  
**DEPARTMENT OF COMPUTER SCIENCE**

**COURSE CODE: CSC 2102**

**DATE: 2018**

**COURSE TITLE: COMPUTER ORG. AND ASSEMBLY LANGUAGE**

**TIME: 2HRS**

**INSTRUCTION:** Answer FIVE (5) questions

- 1a. An understanding of Assembly Language makes a student knowledgeable on?
- b. Differentiate between Assembler Instruction and Assembler Directive.
- c. What is an operand? Perform the AND, OR and XOR instruction on Operand 1 from the operand values below.  
Operand 1 = 0110  
Operand 2 = 1110  
Differentiate between the MUL and DIV instruction
- 2a. Enumerate the different size of information supported by a microprocessor.
- b. What is the complement of FFB4h?
- c. With the assembly instruction below, distinguish and explain the different Addressing Mode.  
MOV EAX, EBX  
MOV AX, 45H  
MOV BX, WORD\_VALUE
3. Discuss the internal connectivity of Computer Memory.
- b. Explain the four main functions of a computer.
- c. Convert a 32 bits binary code to Hexadecimal: State the similarity in the MUL and DIV instruction.
- 4a. What is a Register? Explain the different types of Registers.
- b. In a tabular form, show a representation of an 8 bit binary number.
- c. With a diagram, explain the structural working of the computer system.
- 5a. In assembly language there are syntax and they obey rules. State them
- b. Assembly language is machine dependent. Discuss and explain the instruction  
OR BL, 0FH
- c. 0100110100011010  
From the above, identify;
  - i. Sign bit, Bit, Byte, Word. From the smallest unsigned binary number, generate the largest Hexadecimal Number.
- 6a. What is Computer Memory?
- b. Discuss memory segmentation
- c. What is an interrupt? Distinguish between Hardware Interrupt and Software Interrupt.

**CROSS RIVER UNIVERSITY OF TECHNOLOGY, CALABAR**  
**DEPARTMENT OF COMPUTER SCIENCE**

**COURSE CODE: CSC 2102**

**COURSE TITLE: COMPUTER ORG. AND ASSEMBLY LANGUAGE**

**INSTRUCTION: ANSWER QUESTION ONE (1) AND ANY OTHER THREE (3)**

**DATE: 2019**

**TIME: 2HRS**

- 1a. With the aid of a diagram, discuss the internal working/communication path for data in a computer system. (b) What will be the hexadecimal value of the given operand after each of the following instruction execution (If any instruction is illegal write the word ILLEGAL as the answer). Here var1 and var2 are 16 bit operands.

Instruction	Before	After
mov ax, 5	AX = 0	AX =
mov ax, -5	AX = 0	AX =
mov var1, var2	var1 = 0200h, var2 = 0100h	var1 =
div dl	DL = 02h, AX = 0083h	AX =
mul dl	DL = 02h, AX = 0083h	AX =
mov al, bx	AL = 12, BX = 0015	AX =

- c. In a tabular form, where all the bits values are OFF show a representation of an 8-bit binary number.
- 2a. (i) Differentiate between Assembler Instruction and Assembler Directive. (ii) Give two reasons why registers are used as the source and destination operands for arithmetic instructions
- b. Perform the TEST, AND and XOR instruction on Operand1 from the operand values below.  
Operand 1=0110  
Operand 2=1110
- c. (i) An assembly program is divided into three sections, identify and briefly discuss them.  
(ii) Differentiate between define directives and reserved directives in Assembly Language.
- 3a. In assembly language there are syntax and they obey rules. State them. (b) Explain the assembly instruction:  
ADD BL, 0FH  
PUSH operand  
POP address/register
- c. (i) 0100110100011010: From the binary number, identify; Sign bit, Bit, Byte, Word. (ii) From the smallest unsigned binary number, generate the largest Hexadecimal Number.
- 4a. Segments are specific areas defined in a program. Briefly discuss them. **(b)** (i) What is the value of 2's- complement number represented by the hexadecimal number FFFFFFF9? (ii) The 32-bit 2's complement signed binary integer representation for the decimal integer -47? **(c)** Four 32-bit data registers are used for arithmetic, logical, and other operations. Briefly state how these 32-bit registers can be used for these operations.
- 5a. A group of nine related bits makes a byte, out of which eight bits are used for data and the last one is used for parity, enumerate the different size of information supported by a microprocessor **(b)** With the assembly instruction below, identify and explain the different Addressing Mode.
- i. ADD BYTE\_VALUE, 65  
ii. WORD\_TABLE DW 134,345,564,123  
iii. MOV EAX, EBX **(c)** Discuss memory segmentation
- 6a. What is an interrupt? Discuss the various Hardware and Software interrupts.
- b. (i) Explain the four main functions of a computer (ii) Convert a 32 bits binary code to Hexadecimal
- c. (i) An understanding of Assembly Language makes a student knowledgeable in?

(ii) State the characteristics involve in the implementation of STACK in assembly language.

**CROSS RIVER UNIVERSITY OF TECHNOLOGY, CALABAR**

**DEPARTMENT OF COMPUTER SCIENCE**

**2016/2017 ACADEMIC SESSION FIRST SEMESTER EXAMINATION**

**COURSE CODE: CSC 2102**

**COURSE TITLE: COMPUTER ORG. AND ASSEMBLY LANGUAGE**

**TIME: 2HRS**

**INSTRUCTION: ANSWER QUESTION ONE (1) AND ANY OTHER THREE (3)**

**QUESTION 1**

- Describe the features of a typical pC Hardware.
- Convert the binary number 1101010111001111 to its octal equivalent (base-2 to base-8)
  - Calculate the 8-bit two's complement representation of the following decimal numbers: a=114, b=1, c=-73
  - Showing details of your working, calculate using signed 8-bit two's complement the following sums: a+b, b+c, a+c.
  - Which case result is an overflow?
- Explain the cycle in which the processor execute instructions.

**QUESTION 2**

- What are rules of OP-Code and operand in creating assembly/language syntax?
- List and define with syntax the three (3) sections of the assembly language program
- How are arguments passed in Assembly Language.

**QUESTION 3**

- List and define five (5) Control Register common flag bits (2 bit)
- In a tabled form represent the six registers that store arguments of a system call.
- What does each of the abbreviations IF/ID/EX/MEM stand for? Give a short description of what happens at each stage.

**QUESTION 4**

- Using a diagram only describe the three (3) ways in which 62 bits Data Registers can be implemented
- With the aid of a block diagram represent the four (4) segments of 8086 microprocessors.
- Show the relationship between 32 bits register with 16 bits registers and 16 bits registers with 8 bits register

**QUESTION 5**

- Write a simple Assembly Language program calculating a string length.
- Which type of Addressing Mode is used for a variable that contain arrays? Explain with snippets the element of such a variable.
- Explain the principle of operation of DMA, highlighting its benefits.

**QUESTION 6**

- Write a simple assembly language program to accept three double digit variables and determine the largest.
- In five (5) permutations explain the contents of the table above.

ADD	REG, Memory
	Memory, REG
	REG, REG
	Memory, Immediate
	REG, Immediate

- c. Supply the full meaning of the following instructions and their description, and flags tested (i) JGE/ONL (ii) JNE/JNZ (iii) JNO (iv) JP/JPE (v) JNE/JNZ