



**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
**91 CADASTRAL ZONE, NNAMDI AZIKWE EXPRESSWAY, JABI, ABUJA**  
**FACULTY OF SCIENCES**  
**DEPARTMENT OF COMPUTER SCIENCE**  
**September, 2020\_1 Examination**

**COURSE CODE: CIT 411**

**COURSE TITLE: MICROCOMPUTERS AND MICROPROCESSORS**

**CREDIT: 2 Units**

**TIME ALLOWED: 2 Hours**

**INSTRUCTION: Answer Question ONE (1) and any other THREE (3) Questions.**

**Question 1**

1a. Distinguish between microprocessor and microcontroller. *(4 marks)*

1b. Draw the Architecture of Von Neumann microcomputer and describe its components  
*(7 marks)*

1c. Discuss four (4) technological innovations of microprocessors *(4 marks)*

1d. Identify (6) important features of 8085 microprocessor *(3 marks)*

1e. Examine the Accumulator of 8085 microprocessor *(2 marks)*

1f. Predict the actions performed by the following microprocessors instructions: *(5 marks)*

SN	INSTRUCTION	PREDICTION
i	MOV R1, #0A8h	
ii	POP 9h	
iii	SUBB A, @5h	
iv	ORL A, 05h	
v	DIV BC	

*(Total = 25 marks)*

**Question 2**

2a. Compare x64 with x86 micro processor *(5 marks)*

2b. Assume that x86 microprocessors' Registers R1, R2 and R3  
has the values 0FFh, 0FEh and 0EDh respectively.

Calculate the results of the following operations: *(5 marks)*

SN	OPERATION	RESULT
i	ADD R1, #1	
ii	INC R3	
iii	PUSH R1	
iv	DEC R2	
v.	SUB R2, #1	

2c. What is a coprocessor? (2 marks)

2d. Examine the fields in the coprocessor instruction.(3 marks)

(Total = 15 marks)

### Question 3

3a. Describe coprocessor trap?(3 marks)

3b. Examine the functions of (i).Control Unit (ii). Arithmetic Logic Unit in 8085 Microprocessor (4 marks)

3c. Identify six(6) electronic components that could be connected to a microprocessor (3 marks)

3d. Arrange the actions executed by the microcontroller when an Interrupt Occurs.(5 marks)

(Total = 15 marks)

### Question 4

4a. Identifyfour (4) components of microprocessorinterface (2 marks)

4b. Describethe Immediate addressing mode in 8085 microprocessor. (2 marks)

4c.Compare the hardware Characteristics of Reduced Instruction Set Computer (RISC) with Complex Instruction Set Computer (CISC). (6 marks)

4d. How could microprocessors be applied in Digital Signal Processing (5marks)

(Total = 15 marks)

### Question 5

5a. Describe an interrupt (2 marks)

5b.List the Major features of Superscalar Microprocessor (The PowerPC 601). (2 marks)

5c. Differentiate between Dual-core and Quad-core processors.(5 marks)

5d. Examine the functions oftheFlag components in 8085 microprocessors(6 marks)

(Total = 15 marks)

### Question 6

6a. Describeassembly language?(2 marks)

6b. Criticize the use of low-level language in program development. (4 marks)

6c. Write down and analyze the format of assembly language instruction(8 marks)

(Total = 15 marks)