



**NATIONAL OPEN UNIVERSITY OF NIGERIA,  
PLOT 91, CADASTRAL ZONE, UNIVERSITY VILLAGE, JABI – ABUJA  
FACULTY OF SCIENCES**

**OCTOBER/NOVEMBER 2016 EXAMINATION**

**COURSE CODE: CIT 344**

**COURSE CREDIT: 3**

**COURSE TITLE: INTRODUCTION TO COMPUTER DESIGN**

**TIME ALLOWED: 3 Hours**

**INSTRUCTION: Answer any five (5) questions**

**QUESTIONS**

1a. Find the sum of two 2-digit BCD numbers, 42 and 31. Your result should be in BCD.  
(8 marks)

1b. List 3 common forms of edge-triggered flip-flops employed in digital logic circuits.  
(6 marks)

**[Total = 14 marks]**

2a. Explain with the aid of a diagram how a full adder can be built from half adders  
(10 marks)

2b. Describe the term ‘Microprocessor’ in computer design.  
(4 marks)

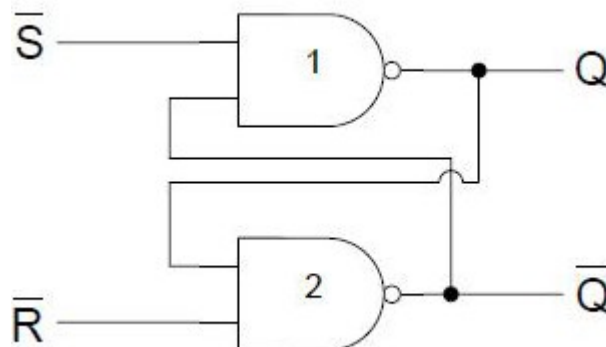
**[Total = 14 marks]**

3a. Write a simple program for declaring a CPU “fetch-execute” cycle. (10 marks)

3b. Distinguish between the two (2) main types of sequential circuits. (4 marks)

**[Total = 14 marks]**

4. Study the block diagram provided, as it will serve as your reference in answering the questions that follow:



- 4a. Which operation is depicted in the diagram? (2 marks)  
4b. Give a detailed explanation of how this process is implemented. (12 marks)  
**[Total = 14 marks]**

5a. Give a brief explanation of how sequential circuits are implemented, using a well-labelled block diagram to illustrate this. (8 marks)

5b. Write down the hexadecimal equivalent of the following:

- i. 11010110101110010110
- ii. 101110010110

(6 marks)  
**[Total = 14 marks]**

6a. Give the binary equivalent of the following decimal numbers

- i. 4
- ii. 3
- iii. 7 ) 2 marks each
- iv. 5

(8 marks)

6b. List 2 key operations performed on memories, within the perspective of computer design,. (6 marks)

**Total = 14 marks]**

7a. Write down the decimal equivalent of the following:

- i. 101110010110
- ii. 11010110101110010110. (8 marks)

7b. Based on your knowledge in computer design, describe any 2 types edge-triggered flip-flops. (6 marks)

**[Total = 14 marks]**