NATIONAL OPEN UNIVERSITY OF NIGERIA
University Village, Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi – Abuja

FACULTY OF SCIENCE

DEPARTMENT OF COMPUTER SCIENCE

2022_1 POP Examination

Course Code: **CIT344**
Course Title: **INTRODUCTION TO COMPUTER DESIGN**
Credit: **3 units**
Time allowed: **3 Hours**
Instruction: Answer Questions **ONE (1)** and any other **THREE (3)** Questions

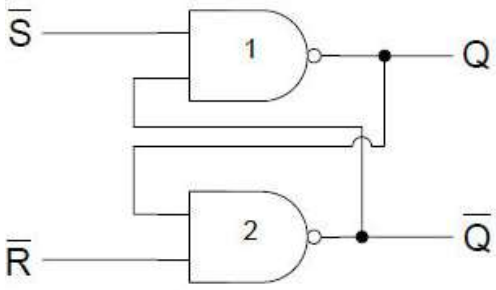
Questions

1a. Enumerate three (3) common forms of edge-triggered flip-flops employed in digital logic circuits. **(6 marks)**

1b. Describe the term 'Microprocessor" in computer design. **(6marks)**

1c. Find the sum of two 2-digit BCD numbers, 32 and 21. Your result should be in BCD and well explained. **(7marks)**

1d. Study the block diagram provided below, and



i. State the operation depicted in the diagram. **(1mark)**
ii. Give a detailed explanation of how this process is implemented **(5marks)**

2. Explain briefly the following terms;

i. Memory Organization **5marks**
ii. Read/Write Signals **5marks**
iii. Address signals **5marks**

3a. Illustrate with the aid of a diagram, the Central processing unit "fetch–execute" cycle. **8marks**

3b. Give a brief explanation of how sequential circuits are implemented, using a well-labelled block diagram to illustrate this. **(7marks)**

4a. Distinguish between the two (2) main types of sequential circuits. **(5marks)**

4b. Write a simple program for declaring a CPU "fetch-execute" cycle. **(10 marks)**

5a. Explain in brief, the following terms;

i. Decimal number system
ii. Binary number system **(3marks)**

5b. Give the binary equivalent of the following decimal numbers

i. 5
ii. 7
iii. 13 **) 2 marks each**
iv. 9
v. 17
vi. 10

6a. Explain with the aid of a diagram how a full adder can be built from half adders. **(10marks)**

6b. Discuss extensively the two major categories of memory chips available. **(5marks)**