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

2022_2 POP EXAMINATION

Course Code: **CIT344**
Course Title: **INTRODUCTION TO COMPUTER DESIGN**
Credit: **3 units**
Time allowed: **3 Hours**
Instruction: Answer Questions **ONE (1) 25marks** and any other **THREE (3) 15marks each** Questions

QUESTIONS

1a. Discuss Finite State Machine (FSM), and outline its characteristics **10marks**

1b. Complete the cells in the table below with either "YES" or "NO". **(6marks)**

Characteristics / Memory Type	Non-Volatile	High Density	One-Transistor	In-System Write Ability
SRAM				
DRAM				
ROM				
EPROM				
EEPROM				
FLASH				

1c. Draw the block diagram of a Read-Write memory. **(7marks)**
1d. State the major ways by which finite state machines may be classified. **(2marks)**

2a. State the application areas or uses of multiplexer. **(5marks)**

2b. Write short notes on latch. **(6marks)**
2c. Complete the cells in the Truth-Table below for a NAND-based S-R Latch. **(4marks)**

Input		Output
S	R	Q_{t+1}
0	0	
0	1	
1	0	
1	1	

3a. In the context of sequential circuit, discuss in brief, the term "Flip-Flops" **(7marks)**

3b. i. State the two basic operations performed on memories **(2Marks)**

3b.ii. Highlight the signals typically used to support the basic operations performed on memories.. **(6Marks)**

4a. Briefly describe a Half-Adder, and full adder. Use diagram to illustrate your answer. **(7marks)**

4b. Itemize the two major functions of a register and its different shift operations. **(8marks)**

5a. State the similarities in the operations of a NAND-based S-R latch and a NOR-based S-R latch **(8marks)**

5b. Enumerate any seven (7) commands in assembly language that allows instructions to be processed when debugging a program. ***(7marks)***

6a. State the classifications of FLASH Memory operations. ***(3marks)***

6b. Enumerate the benefits of using high level programming language. ***(6marks)***

6c. Describe the term assembly language. **(6marks)**