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**NATIONAL OPEN UNIVERSITY OF NIGERIA**

**14-16 AHMADU BELLO WAY, VICTORIA ISLAND LAGOS**

 **SCHOOL OF SCIENCE AND TECHNOLOGY**

**MAY/JUNE 2012 EXAMINATION**

CIT 309 COMPUTER ARCHITECTURE

TIME: 3 HOURS

INSTRUCTION: ANSWER ANY FIVE QUESTIONS IN ALL

1a. List and discuss the basic functions that a computer can perform. *[6 marks]*

1b. Write short note on the components of the C. P. U. *[6 marks]*

1c. Illustrate with simple diagram the basic Instruction fetch and execution cycle. *[8 marks]*

2a. Define the following:

1. processors instruction.
2. Instruction.
3. Data types. *[5 marks]*

2b. Using the Instruction: ADD, R, Y to explain the following:

1. ADD, R, Y
2. Y
3. R
4. ADD *[5 marks]*

2c. Explain the elements of a machine instruction. *[10 marks]*

3a Discuss how the A.L.U is interconnected with the rest of the processor. *[8 marks]*

3b. Briefly state how the 2s complement operation can be perform on any given integer numbers.

 *[6 marks]*

3c. When does the Overflow rule occur? *[6 marks]*

4a. i. Explain what is meant by Micro-operation? *[4 marks]*

1. Give 4 examples of shorter subcycles/operation that made up of an instruction cycle.
2. *[2 marks]*

4b. Write the full meaning of the following acronym:

1. MAR.
2. MBR.
3. IR.
4. PC. *[2 marks]*

4c. Define the following acronym:

1. MAR.
2. MBR.
3. IR.
4. PC.
5. Interrupt.
6. Timer. *[12 marks]*

5a. Define the following:

1. Dual core processor chip. *[3 marks]*
2. L2 cache. *[3 marks]*
3. System control element (SCE). *[2 marks]*

iv. Main store control (MSC). *[2 marks]*

v. Memory card. *[2 marks]*

5b. Write short note on the simultaneous execution of the action: Read word from memory and Increment PC. *[6 marks]*

5c. Discuss why (PC - MAR) must precede (Memory - MBR) operation in fetch cycle. *[2 marks]*

6a. List and briefly explain the four (4) types of parallel processor system. *[10 marks]*

6b. List and describe the two (2) basic tasks of control unit. *[6 marks]*

6c. Explain the following:

1. Clock. *[2 marks]*
2. Flags. *[2 marks]*

7a. Highlight the features and functionality of a multi programming system to accommodate multiple processor. *[2 marks]*

7b. Write short note on the following: *[8 marks]*

1. Multithreading
2. Process switch
3. Thread
4. Thread switch

7c, List and briefly explain the four (4) characteristics of Reduced Instruction Set architecture. *[10 marks]*