

**NATIONAL OPEN UNIVERSITY OF NIGERIA**

**University Village, 91 Cadastral Zone, Nnamdi Azikwe Expressway, Jabi, Abuja**

**FACULTY OF SCIENCES**

**APRIL, 2019 EXAMINATIONS**

**COURSE CODE: CIT309**

**COURSE TITLE: Computer Architecture**

**CREDIT: 3 Units**

**TIME ALLOWED: 2½ Hours**

**INSTRUCTION: Answer Question 1 and any other FOUR (4) Questions**

1a) Distinguish between computer organization and computer architecture. ***(2 marks)***

b) The fetch and execute instruction falls into four categories. Describe them. ***(6 marks)***

c) Generate a Truth Table for the following algebraic function F = ABC. ***(4 marks)***

d) State the four categories of micro-operations ***(4 marks)***

e) List the functional elements of the processor ? ***(2 marks)***

f) What is a gate? ***(4 marks)***

2a) Briefly explain classes of interrupts available ***(6 marks)***

b) Briefly explain the following concepts:

i) Delayed load ***(3 marks)***

ii) Loop unrolling ***(3 marks)***

3a) State and explain the three performance parameters of the memory**. *(7½ marks)***

b) Briefly explain the following terms:-

ii) Process switch ***(2 marks)***

iii) Delayed branch***(2½ marks)***

4a) Enumerate four ways by which Vector facility is integrated into the System J370 Architecture. ***(4 marks)***

b) State any two of the benefits provided by the level of integration of vector facility of the J370 architecture. ***(2 marks)***

c) Enumerate two potential advantages of an SMP over a uniprocessor? ***(3 marks)***

d) Enumerate the two ways by which a disk cache can improve performance ***(3 marks)***

5a) What is the relationship between instructions and micro operations? ***(3 marks)***

b) Enumerate the three key concepts on which the Von Newmann architecture is based ***(3 marks)***

c) Briefly explain the four important instruction set design issues? ***(6 marks)***

6a) List and briefly explain the four principal approaches to multi-threading. ***(8 marks)***

b) State the sequence of operations of the control unit in one clock pulse. ***(4 marks)***