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)*