

**NATIONAL OPEN UNIVERSITY OF NIGERIA**

**University Village, 91 Cadastral Zone, NnamdiAzikwe Expressway, Jabi, Abuja**

**FACULTY OF SCIENCE**

**DEPARTMENT OF COMPUTER SCIENCE**

**JULY 2018 EXAMINATIONS**

**CIT309: Computer Architecture Credit Units: 3**

**Instruction**: *Answer Question 1 (22 marks) and any other four questions each carrying 12 marks* **Time:** *2½ hours*

1a) List and briefly describe the features provided to facilitate DMA transfers from I/O processors in a multiprocessor system. ***(6 marks)***

b) State and discuss the rules for building a RISC machine.***(8 marks)***

c) State the characteristics of a CISC machine.***(3 marks)***

d) List the key characteristics of a symmetric multiprocessor (SMP) system. ***(5 marks)***

2a) State the common types of scheduling.***(6 marks)***

b) What do understand by "Thread"? ***(2 marks)***

c) State and briefly explain the basic tasks performed by a micro-programmed control unit?***(4 marks)***

3a) With the aid of an illustrative diagram, explain the five-state process model. ***(10 marks)***

b) State the basic functions that a computer can perform. ***(2 marks)***

4a) Explain what is meant by a *hardwired* control unit.***(3 marks)***

b) State the major difference between a *hardwired* and a *micro-programmed* control unit.

 ***(2 marks)***

c) Using well-labeled diagram only, illustrate a typical machine instruction fetch-execute cycle. ***(7 marks)***

5a) Briefly describe the following:

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

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

v. Memory card. ***[2 marks]***

**b)** Explain what is meant by Micro-operation. ***(2 marks)***

6a) Briefly discuss the important issues in the design of instruction sets. ***(7½ marks)***

b) Using a well-labelleddiagram,give the general model of the control unit showing all of its inputs and outputs. ***(4½ marks)***