National Open University of Nigeria
Plot 91, Cadastral Zone, Nnamdi Asikiwe Expressway, Jabi – Abuja
FACULTY OF COMPUTING
2024_2 EXAMINATION

COURSE CODE: CIT 309
COURSE TITLE: COMPUTER ARCHITECTURE
CREDIT: 3 Units
TIME ALLOWED: 3 Hours
INSTRUCTION: Answer Question and three Other Questions. Question One Carry 25 Marks while the other questions carry 15 marks each

Question One

1a. i. Discuss three (3) characteristics of reduced instruction set architectures **[5 marks]**

1a. ii. Enumerate ten (10) characteristics considered typical of a classic RISC. **[5 marks]**

1b. i. Explain briefly Sequential Access **[3 marks]**

1b. ii. Explain the following terms **[8 marks]**
- i. Memory Address Register (MAR)
- ii. Memory Buffer Register (BR)
- iii. Program Counter (PC)
- iv. Instruction Register (IR).

1d. i. Explicitly explain Program execution **[4 marks]**

Question Two

2a. i. How did users submit instructions written in FORTRAN**?** **[2 marks].**

2a. ii. What are Gates? **[3 mark]**

2a. iii. What is Design in Digital Circuitry? **[2 marks]**

2b. i. Discuss resource ownership of explicit multithreading**.** **[3 marks]**

2b. ii. State the three (3) activities that occur in parallel in a Register File. **[3 marks]**

2b. ii. Briefly describe Program Creation **[2 marks]**

Question Three

3a. i. Write a short note on the Long-term Scheduler and enumerate the two (2) decisions involved when the long-term scheduler creates processes from the queue when it can. **[5 marks]**

3a. ii. Describe sequential access as it relates to methods of accessing units of data **[2 marks]**

3b. i. Differentiate between long-term and short-term scheduler. **[4 marks]**

3b. ii. Differentiate between volatile and nonvolatile memory? **[4 marks]**

Question Four

4a. i. List the Flynn Categorization of parallel processing system. **[4 marks]**

4a. ii. Explain the following terms **[4 marks]**

i. Synchronization

ii. Memory Management

4b. i. There are different approaches to reduced instruction set architecture but certain characteristics are common to all the approaches. State these characteristics.

[4 marks]

4b. ii. Using a diagram alone, depict a process control block? **[3 mark]**

Question Five

5a. i. Describe access time relative to a non-random-access memory context. **[2 marks]**

5b. ii. Discuss the term Memory protection **[3 marks]**

5b. i. Explain accounting information in the context of scheduling? **[2 mark]**

5b. ii. Define Operating System and state two of OS Objectives **[4 marks]**

5b. iii. Mention four (4) features to facilitate DMA transfers from I/O processors.

[4 marks]