



**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
**University Village, 91 Cadastral Zone, Nnamdi Azikwe Expressway, Jabi, Abuja**  
**FACULTY OF SCIENCES**  
**COMPUTER SCIENCE DEPARTMENT**  
**2024 1 EXAMINATION**

**CIT 314: COMPUTER ARCHITECTURE AND ORGANIZATION**      **Credit: 2½ units**

**INSTRUCTION:      Answer Four (4). Question one is Compulsory**

- 1a. Highlight two disadvantages of Microprogrammed Control Unit (5 mark)
- 1b. Discuss by highlighting, the storage location of a magnetic disk (10 marks)
- 1c. Examine limitations of Asynchronous Controllers. (10 marks)
  
- 2a. Examine core components of a critical system to improve fault tolerance. (4 marks)
- 2b. Discuss cache memory in computer architecture. (5 marks)
- 2c. Define registers and discuss two forms of registers with examples. (6 marks)
  
- 3a. Examine when replacement algorithm is useful. (2 marks)
- 3b. The one-address instruction `ADD R1` = the three-address instruction `ADD R1,Racc,Racc` or to the two-address instruction `ADD R1,Racc`. How? (3 marks)**
- 3c. Discuss the characteristics of fault tolerance systems. (10 marks)
  
- 4a. Assemblers are the programs that generate machine code instructions from a source code program written in assembly language. Highlight the functions of assemblers (3 Marks)
- 4b. What are the issues associated to Hardware and software tolerant. (5 marks)
- 4c. With the aid of well-labelled diagram, discuss the process of Handshaking in Asynchronous buses (7 Marks)**
  
- 5a. What is a redundancy in fault tolerant? (2 marks)
- 5b. Highlight the components of the 16-bit registers in a simple accumulator-based processor (4 Marks)
- 5c. Discuss methods through which data can be transferred to and from the peripherals. (9 marks)

- 6a. List two basic techniques to increase the instruction execution rate of a processor
- 6b.** The quest for higher-performance digital computers has brought about the development of parallel processing. Highlight the motivations of parallel processing. (3 marks)
- 6c. Discuss forms of redundancy in fault tolerant. (10 marks)

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