



**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
**University Village, 91 Cadastral Zone, Nnamdi Azikwe Expressway, Jabi, Abuja**  
**FACULTY OF SCIENCES**  
**COMPUTER SCIENCE DEPARTMENT**  
**2022\_2 EXAMINATIONS**

**CIT314 – Architecture and Organization II** **Credit: 3 units**  
**TIME ALLOWED: 2½ Hours**  
**INSTRUCTION: Answer Question 1 and any other THREE (3) Questions**

**QUESTION ONE**

- a. Why is virtual memory important to a programmer? (2 marks)
- b. Describe any four important instruction set design issues in computer architecture. (6 marks)
- c. Explain the difference between hardwired control and micro programmed control. (6 Marks)
- d. Give a short description of floppy disks recording methods. (6 marks)
- e. State the function of the following terms: (5 marks)
  - i. Control bus
  - ii.) Address bus
  - iii.) Data bus
  - iv.) Karnaugh map
  - v.) Boolean Algebra

**QUESTION TWO**

- a. Discuss the major advantages of a magnetic tape. (4 marks)
- b. Enumerate the characteristics of RISC Architectures. (6 Marks)
- c. With the aid of diagram, describe the basic feature of Sequential Access Method. (3 marks)
- d. Define the term Computer Architecture 2 Marks

**QUESTION THREE**

- a. Discuss the three performance parameters used in memory (6 marks)
- b. Evaluate the following using two's complement: (5 marks)
  - a. 0000 0101 – 0000 1000
  - b. 0000 0111 – 0000 0011

- c. Briefly describe the essential features of an auxiliary memory. (4 marks)

**QUESTION FOUR**

- a. Briefly explain the following terminologies:
  - i.) Processor instruction set (*1 mark*)
  - ii.) Opcodes (*1 mark*)
  - iii.) Arithmetic and Logic Unit (ALU) . (*1 mark*)
  - iv.) Two's complement notation *2 marks*
  - v.) Memory buffer register (MBR) *1 mark*
- b. Write short-note on perimeter-based technologies. (4 marks)
- c. Identify the important capabilities of virtual memory. (3 marks)
- d. Mention four (4) instructions that follow same sequence of five pipeline stages. (*2 marks*)

**QUESTION FIVE**

- a. Write short notes on each of the following
  - i. ROM
  - ii. RAM
  - iii. Computer Architecture (*6 marks*)
- b. The operation of the processor is determined by the instructions it executes. Enumerate four Main elements of a machine instruction. (*6 marks*)
- c. State the sequence of operations of the control unit in one clock pulse. **3 marks**

**QUESTION SIX**

- a. What is memory-mapping, and identify the principal benefits to computing? (*6 marks*)
- b. The main memory is the central storage unit in a computer system. Write a short note to discuss the infrastructure of main memory in a computer system. (*7 marks*)
- c. Discuss the two (2) main objectives of Operating System (*2 marks*)

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