

Tribhuvan University
Institute of Science and Technology
2070
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Bachelor Level/ Second Year/ Third Semester/Science
Computer Science and Information Technology (CSc 201)
(Computer Architecture)

Full Marks: 80
Pass Marks: 32
Time: 3 Hours

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.

Long Questions:

Attempt any two questions: (2x10=20)

1. What is Input-Output Processor (IOP)? Why IOP is needed in Computer Science? Explain.
2. Explain the DMA controller with block diagram. How the DMA interact with I/O device? Explain.
3. What in the general model of Microprogram Control Unit? Explain the major steps when you designing of microprogram control unit.

Short Questions:

Attempt any ten questions: (10x6=60)

4. What is an error detection code? Explain.
5. Design the binary adder-subtractor with example.
6. Write down the code to evaluate $y = A(B/C - D) + E$ for one, two and three instruction format.
7. Mention the different types of data transfer instructions and explain with example.
8. What are the different types of I/O techniques? Explain.
9. What are the typical characteristics of RISC instruction set architecture? Explain.
10. Show the steps of multiplication process using Booth algorithm of the following binary numbers: $Y = 8 \times 10$.
11. What are the difference between I/O bus and interface modules? Explain.
12. Differentiate between Input-Output Processor (IOP) and Direct Memory Access (DMA).
13. What are the key characteristics of computer memory system? Explain.
14. What is the role of memory management hardware? Explain.
15. Write short notes on the following:
 - (a) Memory protection
 - (b) Address mapping