



Name :

Roll No. :

Invigilator's Signature :

CS/B.Tech (CSE/IT)(NEW)/SEM-3/CS-303/2011-12

2011

COMPUTER ORGANIZATION

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : $10 \times 1 = 10$
 - i) How many address bit are required for a 1024×8 memory ?
 - a) 1024
 - b) 5
 - c) 10
 - d) none of these.
 - ii) Micro instructions are kept in
 - a) Main memory
 - b) Cache memory
 - c) Control memory
 - d) None of these.
 - iii) Booth's algorithm for computer arithmetic is used for
 - a) multiplication of numbers in signed magnitude form
 - b) division of numbers in signed magnitude form
 - c) multiplication of numbers in 2's complement form
 - d) division of numbers in 2's complement form.



- iv) In a microprocessor, address for the next executable instruction is stored in the
 - a) stack pointer
 - b) program counter
 - c) instruction register
 - d) none of these.
- v) A single bus structure is primarily found in
 - a) Mini and micro computers
 - b) Large mainframe computers
 - c) Super computers
 - d) Analog computers.
- vi) Cache memory is used to
 - a) increase performance
 - b) increase machine cycles
 - c) decrease performance
 - d) none of these.
- vii) Instruction cycle is
 - a) Fetch-decode-execution
 - b) Fetch-execution-decode
 - c) Fetch-encode-execution
 - d) Fetch-execution-encode.
- viii) Equivalent hexadecimal of $(76575372)_8$ will be
 - a) FAFAFF
 - b) FAFABA
 - c) FFFAAA
 - d) FAAFAB.
- ix) Associative memory is
 - a) a very cheap memory
 - b) pointer addressable memory
 - c) content addressable memory
 - d) all of these.
- x) Which of the following addressing mode is used for the instruction "Push B" ?
 - a) Register
 - b) Register indirect
 - c) Direct
 - d) Immediate.



GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

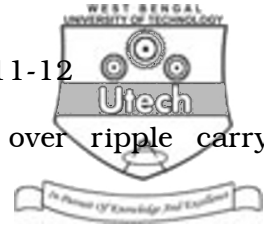
2. Explain the difference between full associative and direct mapped cache mapping approaches ? Explain “write through” and “write back” policies in cache ? $3 + 2$
3. Differentiate between three, two, one and zero address instructions with suitable examples. Explain base index addressing with example. $3 + 2$
4. What is interrupt ? Differentiate vectored and non-vectored interrupts ? $1 + 4$
5. Compare and contrast RISC and CISC architecture in brief.
6. What are the advantages of micro programming control over hardwired control ? Explain the role of an operating system in brief. $3 + 2$

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7.
 - a) Describe the major components of a digital computer with a suitable block diagram.
 - b) What are von Neumann concept and its bottleneck ?
 - c) Explain and draw a binary decrement unit.
 - d) Represent the decimal value – 7.5 in IEEE – 754 single precision floating point formats. $5 + 4 + 3 + 3$
8.
 - a) Compare parallel adder with serial adder.
 - b) With a suitable block diagram discuss the construction and working principles of an 8-bit carry-look-ahead adder.



- c) What are the advantages of CLA over ripple carry adder ?
- d) Explain the importance of a common bus system in a computer. 4 + 5 + 4 + 2
9. a) Explain Booth's multiplication algorithm with a suitable flowchart.
- b) Using Booth's algorithm multiply (- 12) and (+ 6).
- c) What do you mean by 'guard bit' ? 8 + 5 + 2
10. a) Explain instruction cycle, machine cycle and T-states with suitable example.
- b) What are the advantages of relative addressing mode over direct address mode ?
- c) Draw and explain the timing diagram for memory write operation.
- d) Evaluate the arithmetic statement $X = (A * B) / (C + D)$ in one, two and three address machine. 5 + 4 + 3 + 3
11. Write short notes on any *three* of the following : 3 × 5
- a) IAS computer
- b) Concept of hand shaking in IO operation
- c) Static and dynamic memory
- d) DMA controller
- e) Classify MRI and non-MRI instructions.

