

Name :

Roll No. :

Invigilator's Signature :

**CS/BCA/SEM-2/BCA-201/2010
2010**

**COMPUTER ARCHITECTURE AND
SYSTEM SOFTWARE**

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) 8085 is a bit microprocessor.

- a) 8
- b) 16
- c) 32
- d) 64

ii) The sum of $(10110)_2$ and $(1100)_2$ is

- a) 011011
- b) 100011
- c) 001100
- d) 100010.

iii) The instruction LOAD is a

- a) zero-address instruction
- b) one-address instruction
- c) two-address instruction
- d) three-address instruction.

2004

[Turn over

CS/BCA/SEM-2/BCA-201/2010

- iv) 2's complement of 1010100 is
- a) 0110011
 - b) 0101100
 - c) 1010101
 - d) 0010010.
- v) DMA stands for
- a) Data Memory Access
 - b) Distributed Memory Access
 - c) Detect Memory Access
 - d) none of these.
- vi) is an implementation technique whereby multiple instructions are overlapped during an execution.
- a) Pipelining
 - b) Hazard
 - c) Interrupt
 - d) Strobe.
- vii) MAR stands for
- a) Memory Address Register
 - b) Memory Abstract Register
 - c) Memory Activity Register
 - d) none of these.
- viii) The register is used to store result of an instruction.
- a) Program counter
 - b) Base register
 - c) Flag register
 - d) None of these.
- ix) The Race condition is appeared in a clock S-R flip-flop when the values of R & S are
- a) 1, 1
 - b) 1, 0
 - c) 0, 0
 - d) 0, 1.

CS/BCA/SEM-2/BCA-201/2010

- x) is a memory which transmits data from main memory to CPU and vice versa.
- a) RAM
 - b) Cache
 - c) Auxilliary
 - d) Virtual.

GROUP - B

(Short Answer Type Questions)

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

2. What do you mean by memory read and write operation ? Describe using register transfer language.
3. Explain direct and indirect addressing with the help of neat sketch.
4. What is virtual memory ?
5. Write down the register transfer language for execution of LDAX B
STAX D
6. Comment on Direct mapping function of 2048 word cache memory onto 65,536 word main memory.

GROUP - C

(Long Answer Type Questions)

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

7. What is virtual memory ? What could be maximum size of virtual memory ? Justify. Briefly describe an instruction execution cycle with proper timing diagram. Explain the Booth's algorithm. Illustrate with example. Briefly discuss different types of ROM. Differentiate between Static RAM and Dynamic RAM. $3 + 3 + 3 + 3 + 3$

CS/BCA/SEM-2/BCA-201/2010

8. What are the differences between RISC and CISC processors ? Explain the concepts of sequential processing, pipelining and parallel processing with examples. What are the elements of a machine instruction ? What is meant by memory access time ? $4 + 6 + 3 + 2$
9. What are 16-bit registers available in 8085 Microprocessor ? Write about them. What is 'bootstrap loader' program stored in ROM and not in RAM ? What are the elements of machine instruction ? $2 + 3 + 5 + 5$
10. What is interrupt ? What is the difference between primary and secondary storage devices ? What is stack ? What is flag ? What is the disadvantage of microprocessor ? What is the difference between microprocessor and microcontroller ? $2 + 4 + 2 + 2 + 2 + 3$
11. Write short notes on any *three* of the following : 3×5
- a) Vector processing
 - b) Paging
 - c) DMA controller
 - d) Cache memory
 - e) 4 in 1 multiplexer.
-