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.

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.

x) ..... is a memory which transmits data from main memory to CPU and vice versa.

a) RAM b) Cache

c) Auxiliary d) Virtual.

GROUP – B
(Short Answer Type Questions)

Answer any *three* of the following. 3 × 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 × 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

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.