

Total No. of Questions : 10] [Total No. of Printed Pages : 3

Roll No.

401(N)

B. E. (Fourth Semester) EXAMINATION, June, 2010

(New Scheme)

(Common for CS, EC & IT Engg. Branch)

COMPUTER SYSTEM ORGANIZATION

Time : Three Hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : Attempt *one* question from each Unit. All questions carry equal marks.

Unit – I

1. (a) Draw and explain the functional block diagram of 8085 microprocessor. Also draw its flag structure. 10
- (b) Write down the instruction formats of a basic computer. Explain the fetch, decode and execution cycle of any *one*. 10

Or

2. Write short notes on the following : 20
 - (a) Computer registers
 - (b) Stored program organization
 - (c) Microoperations
 - (d) Instruction cycle

P. T. O.

Unit – II

3. (a) Compare hardwired and microprogrammed control units giving their relative merits and demerits. 10
- (b) Draw the format of a microinstruction and explain how a microprogram sequencer works. 10

Or

4. (a) Explain the algorithm for division of signed magnitude data. What is divide overflow ? 10
- (b) Draw the block diagram of a BCD adder. Explain how decimal subtraction can be performed. 10

Unit – III

5. (a) Explain how I/O interfaces supervise and synchronize the processor bus and the peripheral devices. 10
- (b) What are the different methods of DMA transfer ? Explain the actual process of direct memory access. 10

Or

6. (a) Enlist the data transfer instructions of 8085 microprocessor. Write an assembly language program to add two 8 bit numbers 46 H and 52 H and to store the result at 4008 H . 10
- (b) What are the advantages of handshaking during asynchronous data transfer ? Which signals are used for handshaking ? 10

Unit – IV

7. Explain the following terms : 20
- (a) Destructive and non-destructive memory readout
- (b) Read and virtual memory
- (c) Associative and set associative memory
- (d) Memory management unit

[3]

Or

8. (a) Explain cache memory organization. Which mapping techniques are used in cache memory ? 10
- (b) A virtual memory system has an address space of 8 k words, a memory space of 4 k words and page and block sizes of 1 k words. The following page reference changes occur during a given time interval. (only page changes are listed. If the same page is referenced again, it is not listed twice)

4 2 0 1 2 6 1 4 0 1 0 2 3 5 7

Determine the 4 pages that are resident in main memory after each reference change if the replacement algorithm used is : 10

- (i) FIFO
- (ii) LRU

Unit – V

9. (a) Draw a four segment instruction pipeline. Also draw the timing diagram. 10
- (b) Explain the following terms in relation to pipelining : 10
- (i) Throughput
 - (ii) Space time diagram
 - (iii) Speedup
 - (iv) Hardware interlocks
 - (v) Operand forwarding

Or

10. (a) Explain how branch instructions are handled in pipelining ? 10
- (b) Write a short note on supercomputers. 10