Roll No. ....

Total Pages : 03

D-180257

B. Tech. EXAMINATION, 2018

Semester III (CBS)

COMPUTER ARCHITECTURE & ORGANIZATION

(CSE, IT)

CS-303

Time : 3 Hours

Maximum Marks : 60

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt *Five* questions in all, selecting *one* question from each Units I, II, III and IV. Unit V is compulsory.

Unit I

1. (a) Draw the block diagram of a dual 4-to-1 line multiplexer and explain its operation by means of a function table.

    (b) Explain Bi-directional shift register with parallel load (with function table).   6+6

2. (a) With the help of suitable example, explain Booth multiplication algorithm with flow diagram.

    (b) Explain floating point arithmetic operation with example.   6+6

Unit II

3. (a) Explain the control unit of basic computer with timing and control functionality.

    (b) Discuss instruction formats for three address, two address, one address and zero address instructions.   6+6

4. (a) Explain the instruction cycle of memory unit for register transfer (fetch phase).

    (b) What is data transfer and manipulation ? Differentiate between synchronous and asynchronous data transfer.   6+6

Unit III

5. (a) Describe 'DMA Controller'. Why does DMA have a priority over CPU when both request a memory transfer ?

(b) Describe briefly modes of transfer to and from peripherals. **6+6**

6. What is cache memory ? Discuss different mapping techniques with respect to cache memory. **12**

Unit IV

7. (a) What makes pipelining hard to implement ? What is dynamic pipeline scheduling ?

(b) Write a short note on interprocessor communication and synchronization. **6+6**

8. Explain with flow diagram of airthmetic pipeline for floating point addition or subtraction. **12**

Unit V

9. Write short notes on any *two* of the following :

(a) Demultiplexer

(b) Shift register

(c) Addressing mode

(d) SPEC benchmarks

(e) Low order memory interleaving.

(f) Stack organization. **6×2=12**