

B.TECH.

THEORY EXAMINATION (SEM-IV) 2016-17

COMPUTER ORGANIZATION

Time : 3 Hours

Max. Marks : 100

Note : Be precise in your answer. In case of numerical problem assume data wherever not provided.

SECTION-A

1 Explain the following : (10×2=20)

- What is multiplexer? Give some applications of multiplexer.
- Show the bit configuration of 24 bit register when its contents represent the decimal equivalent of 195 in BCD.
- Discuss self complementing BCD code.
- What is micro code? Explain.
- What do you understand by wide branch addressing? Explain.
- Write short note on RISC.
- Write short note on indirect addressing.
- Discuss write back method.
- What is flash memory?
- What is asynchronous data transfer? Explain.

SECTION-B

2 Attempt any five of the following : (10×5=50)

- Register A holds the 8-bit binary 11011001. Determine the B operand and the logic micro operation to be performed in order to change the value in A to
 - 01101101
 - 11111101
- Give the hardware implementation of following operations;-
 - Selective set
 - Selective complement
- Write a program to evaluate the arithmetic statement

$$X = (A - B + C * (D * E - F)) / (G + H * K)$$

- Using a general register computer with three address instructions.
 - Using an accumulator type computer with one address instruction.
- Give the brief description of various I/O bus architecture.
 - What do you understand by hardwired control? Also discuss DMA.
 - Write short notes on
 - Serial communication
 - Input Output Processor
 - A virtual memory has page size of 1 K words. There are 8 pages and 4 blocks. The associative memory page table contains the following entries

Page	Block
0	3
1	1
4	2

Make a list of all virtual addresses (in decimal) that will cause a page fault if used by the CPU.

- h) Explain decoder. Draw the block diagram of 2 to 4 line decoder with NAND gate. Also show its truth table.

SECTION-C

Attempt any two of the following : (15×2=30)

3. Attempt the following

- Give the block diagram of DMA controller. Why are the read and write control lines in a DMA controller bidirectional?
- Discuss the working principle of I/O processor

4. Attempt the following

- What do you mean by asynchronous data transfer? Explain strobe controller and hand shaking mechanism for asynchronous data transfer.
- Convert the followings
 - $(100100)_2 = (?)_{10}$
 - $(235.41)_7 = (?)_{13}$

5. Attempt the following

- An encoded microinstruction format is to be used. Show how a 9 bit micro operation field can be divided in to sub field to specify 46 different actions.
- How a processor executed instructions? Define the internal functional units of a processor and how they are interconnected?