Printed Pages : 2 Roll No. ECS401

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)

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

SECTION-B

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

a) 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
   i. 01101101
   ii. 11111101
b) Give the hardware implementation of following operations;-
   i. Selective set
   ii. Selective complement
c) Write a program to evaluate the arithmetic statement

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

   i. Using a general register computer with three address instructions.
   ii. Using an accumulator type computer with one address instruction.
d) Give the brief description of various I/O bus architecture.
e) What do you understand by hardwired control? Also discuss DMA.
f) Write short nots on
   i. Serial communication
   ii. Input Output Processor
g) 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

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

4. Attempt the following

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

5. Attempt the following

   a. 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.
   b. How a processor executed instructions? Define the internal functional units of a processor and how they are interconnected?