Total No. of Pages 02 *Roll No. .....*

FOURTH SEMESTER **B.Tech. (CO)**

END SEMESTER EXAMINATION *MAY-2019*

CO-206 COMPUTER ORGANIZATION AND ARCHITECTURE

Time: 3:00 Hours *Max. Marks: 50*

Note: Answer Any **FIVE** questions. All questions carry equal marks.
Assume suitable missing data, if any.

1[a] Attempt the following:-

i. Simplify the Boolean function:- xy'z + x'y'z + xyz. Also give its canonical SOP form.

ii. Convert the hexadecimal number F3A7C2 to binary and octal.

iii. How many address lines, data lines and control lines are there in 16M*32 memory.

[b] Give Signed Magnitude, 1's complement and 2's complement representation using 8 bits, of the following numbers: (a) -13. (b) -128.

2[a] What is difference between a direct and an indirect address instruction? How many references to memory are needed for each type of instruction to bring an operand into a processor register?

[b] Write a subroutine to subtract two numbers. In the calling program, the BSA instruction is followed by the subtrahend and minuend. The difference is returned to the main program in the third location following the BSA instruction.

3[a] Give the flow table for register contents used in implementing booth's algorithm for the multiplier = - 6 and multiplicant = + 5.

[b] Give the flow chart of division of two signed magnitude data. Discuss the logic of the flow chart.

4[a] Define addressing mode. With the help of example explain different addressing modes.

[b] Explain stack organisation used in processors. Differentiate between a register stack and a memory stack.

5 [a] Explain DMA based data transfer. Give the respective block diagram.

[b] Explain in brief with the help of a diagram the working of daisy chaining with multiple priority levels and multiple devices in each level.

6 [a] Show the memory organization (1024 bytes) of a computer with four 128x8 RAM Chips and 512x8 ROM Chip. How many address lines are required to access memory. Explain the address range of each memory.

[b] Explain in detail the different mappings used for cache memory. Compare them.

7 Write short notes:-

[a] Virtual Memory

[b] IR and PC.

[c] Instruction cycle flow chart

[d] Bus organization with help of figure.