R07

B.Tech IV Year II Semester (R07) Supplementary Examinations December/January 2014/2015

COMPUTER ORGANIZATION & ARCHITECTURE

(Mechanical Engineering)

Time: 3 hours   Max. Marks: 80

Answer any FIVE questions

All questions carry equal marks

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1   (a)   Explain the subtraction of numbers using 2's complement with an example.
     (b)   Find the output binary umber after performing the following arithmetic operations:
            (i) 111.011 + 10.111.
            (ii) 11.101 + 110.111.
            (iii) 1110.11 – 111.011.

2   (a)   Draw a diagram of a bus system but use three-state buffers and decoders instead of the multiplexes. Explain the concept of three-state buffers.
     (b)   Briefly explain about memory-reference instructions.

3   (a)   Give the typical horizontal and vertical microinstruction formats.
     (b)   Describe how microinstructions are arranged in control memory and how they are interpreted.

4   (a)   Multiply 10111 with 10011 using, Booths algorithm
     (b)   Define the following:
            (i) Micro operation.
            (ii) Micro instruction.
            (iii) Micro program.
            (iv) Micro code.

5   (a)   Explain magnetic disks and magnetic tapes.
     (b)   What is the transfer rate of an eight-track magnetic tape whose speed is 120 inches per second and whose density is 1600 bits per inch?

6   (a)   Briefly explain the process of I/O interface unit with an example.
     (b)   Describe an asynchronous data transfer using hand shaking with the help of timing diagram.

7   (a)   Explain the process of three-segment instruction pipeline.
     (b)   Define delayed load and delayed branch.

8   Write short notes on the following:
     (a)   Daisy- chain priority interrupt.
     (b)   8*8 omega switching network.

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