Third Semester B.E. Degree Examination, June/July 2017

Computer Organization

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

1   a.   With a neat block diagram discuss the basic operational concept of a computer.   (06 Marks)
    b.   Explain the methods to improve the performance of computer.   (04 Marks)
    c.   Explain Big-Endian, little Endian and assignment byte addressability.   (06 Marks)

OR

2   a.   What are addressing modes? Explain the different 4 types addressing modes with example.
                                                                                            (08 Marks)
    b.   Write the use of Rotate and shift instruction with example.   (04 Marks)
    c.   What is stack and queue? Write the line of code to implement the same.   (04 Marks)

Module-2

3   a.   Define bus arbitration? Explain detail any one approach of bus arbitaration.   (08 Marks)
    b.   What are priority interrupts? Explain any one interrupt priority scheme.   (04 Marks)
    c.   Write a note on register in DMA interface.   (04 Marks)

OR

4   a.   With a block diagram explain how the printer interfaced to processor.   (08 Marks)
    b.   Explain the following with respect to U.S.B
             i)   U.S.B Architecture
             ii) U.S.B protocols.   (08 Marks)

Module-3

5   a.   Define :
             i)   Memory Latency
             ii)   Memory bandwidth
             iii) Hit-rate
             iv)   Miss-penality.   (04 Marks)
    b.   With a neat diagram explain the internal organization of a 2M×8 dynamic memory chip.
                                                                                            (06 Marks)
    c.   Explain Associative mapping technique and set Associative mapping technique.   (06 Marks)

OR

6   a.   What is virtual memory? With a diagram explain how virtual memory address is translated.
                                                                                            (08 Marks)
    b.   Write a note on :
             i)   Magnetic tape system
             ii) Flash memory.   (08 Marks)

Module-4

7 a. Perform following operations on the 5-bit signed numbers using 2's complement representation system. Also indicate whether overflow has occurred.
   i) $(-9) + (-7)$ ii) $(+7) - (-8)$. (04 Marks)

   b. Explain with a neat block diagram, 4 bit carry lookahead adder. (05 Marks)

   c. Explain the concept of carry save addition for the multiplication operation, $M \times Q = P$ for 4-bit operands with diagram and suitable example. (07 Marks)

OR

8 a. Multiply the following signed 2's complement numbers using Booth's algorithm multiplicand $= (010111)_2$, multiplier $= (110110)_2$. (05 Marks)

   b. Perform division operation on the following unsigned numbers using the restoring method. Dividend $= (10101)_2$ Divisor $= (00100)_2$. (05 Marks)

   c. With a neat diagram, explain the floating point addition/subtraction unit. (06 Marks)

Module-5

9 a. Draw and explain multiple bus organization of CPU. And write the control sequence for the instruction Add R4, R5, R6 for the multiple bus organization. (08 Marks)

   b. Explain with neat diagram, micro-programmed control method for design of control unit and write the micro-routine for the instruction Branch < 0. (08 Marks)

OR

10 a. With block diagram, explain the working of microwave oven in an embedded system. (08 Marks)

   b. With block diagram, explain parallel I/O interface. (08 Marks)

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