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15CS34

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 arbitration. (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-penalty. (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)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.



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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)
