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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belgaum)

Third Semester, B.E. - Computer Science and Engineering

Semester End Examination; Dec - 2016/Jan - 2017

Computer Organization

Time: 3 hrs

Max. Marks: 100

Note: Answer FIVE full questions, selecting ONE full question from each unit.

UNIT - I

- 1 a. Explain the various types of computers. 5
- b. Explain the three systems used for representing numbers with examples. 5
- c. Explain how performance is affected by technology and parallelism? 6
- d. Convert the decimal numbers 7 and 13 to 5 bit 2's complement numbers and perform addition. 4
- 2 a. Explain Big-endian and Little-endian methods with examples. 5
- b. Explain basic instruction types. 5
- c. What is an addressing mode? List and explain the various addressing modes. 10

UNIT - II

- 3 a. What is subroutine nesting? Explain the role of processor stack while nesting. 5
- b. What is the basic technique of accessing an I/O device? What are its limitations? 5
- c. How multiple devices are handled in processing interrupts? Explain vectored interrupts in details. 10
- 4 a. Describe the interaction between assembly language and 'C' language. 10
- b. Explain various types of parameter passing with examples. 10

UNIT - III

- 5 a. With a neat sketch, explain single bus organization of the data path inside a processor. Further, list and explain the generic operations performed during instruction executions. 10
- b. With neat sketches, explain hardwired control (Control unit, decoding-encoding logic). 10
- 6 a. What is bus arbitration? Explain simple arrangements for the same. 5
- b. Explain in detail PCI bus. 10
- c. Explain synchronous BUS operation. 5

UNIT - IV

- 7 a. With a neat sketch, explain the organization of a 2m X 32 memory using 512 K x 8 static memory chips. 6
- b. Explain various forms of ROM. 4
- c. Write a note on DMA 5
- d. What is page replacement? With an example explain any one algorithm. 5

- 8 a. Explain the three types of cache mapping. Give suitable examples. 10
- b. Explain hit rate and miss penalty. 5
- c. With a block diagram, explain virtual memory organizations. 5

UNIT - V

- 9 a. With diagram, explain binary addition/subtraction logic network. 5
- b. What is fast adder? Explain it's logic. 5
- c. Explain the process of mutiplication of positive numbers with a registers configuration and an illustration. 10
- 10 a. What is bit-pair recoding of multiplier? Explain its benefit with an example. 5
- b. Write the circuit for a binary division. Illustrate how it works, taking an example. 10
- c. Explain single and double precision IEEE floating point presentations of numbers. 5

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