Reg. No. : | | | | | | | | | | | |

C 3199

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2008.

Sixth Semester

(Regulation 2004)

Electronics and Communication Engineering

CS 1251 – COMPUTER ARCHITECTURE

(Common to B.E. (Part-Time) Fifth Semester Regulation 2005)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. Name the functional units of a computer and how they are interrelated.

2. When addressing mode will be viewed critically?

3. How do you ascertain an adder as "fast"?

4. What is a signed number? Where it is used?

5. What is meant by a multiple bus? Where it is organised?

6. Define data hazards.

7. What is a superscalar operation?

8. What is the principle of semiconductor memory?

9. What is an non-maskable interrupt? What is the action performed on receipt of a NMI?

10. What are the advantages of USB interface?

PART B — (5 × 16 = 80 marks)

11. (a) (i) What are the softwares used in a computer to operate all the functional units? Discuss briefly on the bus structures.

(ii) Discuss the operations of a bus.

(iii) Calculate the number of memory addresses for a 4 MB memory with a 16 bit word. (6 + 6 + 4)

Or

(b) Describe instructions of a computer and how they are sequenced. How is memory organization related to this? (6 + 6 +4)

12. (a) Explain an algorithm to multiply two positive numbers. Also discuss the realization of a multiplier to implement the same.

Or

(b) How different arithmetic and logic functions are realized and integrated in an ALU? Explain.

13. (a) What is hardwired control? Explain micro-programmed control and compare it with hardwired control. Which is preferred under what circumstances?

Or

(b) Explain the concept of Pipelining. Discuss the influence of various pipelining hazards on instruction set.

14. (a) Describe the working principle of RAM, ROM and cache memories. Compare them based on their speed, size and cost.

Or

(b) What is virtual memory? Explain the various memory management schemes. What is the need for different memory management schemes?

15. (a) Describe DMA and its implementation. State the advantages of DMA over the other modes of I/O transfer.

Or

(b) Write short notes on

(i) Interrupts

(ii) Standard I/O interfaces.

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