B 2270

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2007.

Third Semester

Information Technology

IF 245 — COMPUTER ARCHITECTURE

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define firmware.

2. Write the role of stack in program execution.

3. Compare memory mapped I/O and isolated I/O.

4. What do you mean by round-off error?

5. Distinguish between a hardwired and micro programmed control.

6. Define locality of reference.

7. What are the advantages of content addressable memories?

8. Write the use of space-time diagram.

9. Write the difference between loosely-coupled system and tightly-coupled system.

10. Name any two RISC processors.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Write the advantages and disadvantages of stored program concept. (6)

(ii) Discuss the instruction formats of S/360-370 computer. (10)

Or

(b) Draw a diagram and explain the architecture of first generation and second generation computers. (16)

12. (a) (i) Describe the representation of floating-point number in the computer. (8)

(ii) Draw a logic diagram showing how to construct a microprogram sequencer for a 64 ×12 bit control memory. (8)

Or

(b) (i) Explain the non-restoring division algorithm for unsigned numbers. (12)

(ii) What are the basic requirements of any instruction set? (4)

13. (a) (i) With a neat diagram, explain the design of a cache memory. (10)

(ii) Write short notes on memory interleaving. (6)

Or

(b) Explain the various types of data transfer modes in detail. (16)

14. (a) (i) Write the Flynn's classification of computers. (5)

(ii) Discuss the design issues of parallel processing computers. (11)

Or

(b) (i) Design a floating-point adder using four segment pipeline and explain its operation. (11)

(ii) List out the characteristics of systolic array. (5)

15. (a)

(b)

15. (a) Explain SPARC architecture in detail. (16)

Or

(b) (i) Discuss the need for fault-tolerant computers. (8)

(ii) List out the difference between RISC and CISC. (8)