

D 21831

(Pages : 2)

Name.....

Reg. No.....

**EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION
DECEMBER 2011**

CS 04 802—COMPUTER ARCHITECTURE AND PARALLEL PROCESSING

(2004 Admissions)

Time : Three Hours

Maximum : 100 Marks

Answer all questions.

Part A

1. (a) Define Amdahl's law and explain the factors that is used to find the speedup of an enhanced machine.
- (b) What is meant by caller saving and callee saving. Distinguish the above two with examples.
- (c) Explain dynamic scheduling with suitable example.
- (d) Explain compiler vectorization.
- (e) Explain the different levels in a memory hierarchy.
- (f) Explain protection in the Intel Pentium system.
- (g) Explain the generic interconnection network.
- (h) List the advantages of shared-memory communication mechanism.

(8 × 5 = 40 marks)

Part B

2. (a) (i) Derive the CPU performance equation.
- (ii) Consider the following measurements :

Frequency of FP operation (other than FPSQR) = 30 %.

Average CPI of FP operations = 4.00

Average CPI of other instructions = 1.33

Frequency of FPSQR = 20.

Assume that the two design alternatives are to decrease the CPI of FPSQR to 2 or to decrease the average CPI of all FP operations to 2.5. Compare these two design alternatives using the CPU performance equation.

Or

- (b) Explain the implementation of pipeline for DLX and list the implementation difficulties.
3. (a) Draw a flowchart to bring out the steps involved in handling an instruction with a branch-target and explain the flow.

Or

- (b) Describe the basic compiler techniques used for exposing ILP.

Turn over

4. (a) Write note on :

- (i) DRAM technology.
- (ii) SRAM technology and
- (iii) Embedded processor technology.

Or

- (b) (i) Explain the performance measures of an I/O system.
- (ii) Write notes on unix file system performance.

5. (a) What are the practical issues for commercial interconnection networks ?

Or

- (b) (i) Explain Flynn's classification of computers.
- (ii) Discuss the performance metrics for communication mechanisms.

(4 × 15 = 60 marks)

HowToExam.com