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UNIVERSITY OF PUNE

[4364]-772

B. E. (Computer Engg.) Examination - 2013

Advanced Computer Architecture

(2008 Course)(410449)

[Time: 3 Hours]

[Max. Marks: 100]

Instructions:

- 1 *Answer three questions from section I and three questions from section II.*
- 2 *Answers to the two sections should be written in separate answer-books.*
- 3 *Neat diagrams must be drawn wherever necessary.*
- 4 *Assume suitable data, if necessary.*

SECTION -I

Q.1 A Explain in brief general classification of parallel computer architecture based on the following techniques. [8]

- i) Flynn's classification
- ii) Feng's classification

B Explain the following terms with respect to parallel processing [10]

- i) Sequential execution time
- ii) Parallel execution time
- iii) Efficiency
- iv) Speedup
- v) Scalability

OR

Q.2 A What do you mean by EPIC? State and explain features of EPIC. [8]

B Explain the architecture of Itanium processor in detail. [10]

Q. 3 A Explain following advanced pipelining techniques in details [8]

- i) Loop unrolling
- ii) Trace Scheduling

B Explain any four features of Ultra SPARC. Explain the concept of register stack exchange(RSE). [8]

OR

Q. 4 A With the help of the block diagram explain in detail branch prediction logic implementation in Pentium architecture. [8]

B Discuss in detail classification of pipeline processors. [8]

Q. 5 A Discuss with suitable example the necessity of data routing and manipulation with respect to SIMD interconnection [8]

B Discuss a problem of parallel sorting with appropriate interconnection network. Obtain the complexity. [8]

OR

Q. 6 A Discuss any two vector optimization functions implemented in vectorizing compiler. [8]

B Explain in brief the programming model of CRAY-1 vector processor. [8]

SECTION II

Q. 7 A Explain cache coherence problem. Explain “Write-invalid” protocol. [8]

B Explain significance of multiport memory to support Inter-processor Communication Network. [8]

OR

Q. 8 A What do you mean by Inter-processor communication and synchronization? Discuss the various issues involved in brief. [8]

B Write short notes on time shared bus, crossbar switch and multiport memory model. [8]

Q. 9 A Explain with suitable example message passing parallel Programming. [8]

B With suitable example, explain block and simultaneous multithreading. [8]

OR

Q. 10 A Discuss various context switching policies implemented in multithreaded architecture [8]

B Explain significance of
i) Latency hiding techniques [8]
ii) And principles of multithreading

Q. 11 A Explain in detail the various features of parallel programming language. [8]

B Discuss issues in multiprocessor operating systems in detail. [10]

OR

- Q. 12 A Explain in short [10]
 i) Neuro computing
 ii) Grid computing
- B What are features of PVM? How processes are created [8]
 in PVM? Explain the communication functions defined
 under PVM.

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