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Question Paper Code: 71393

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2015.

Sixth Semester

Computer Science and Engineering

CS 2354/CS 64/10144 CS 604 — ADVANCED COMPUTER ARCHITECTURE

(Regulation 2008/2010)

Time: Three hours

Maximum: 100 marks

Answer ALL questions.

PART A —  $(10 \times 2 = 20 \text{ marks})$ 

- 1. Briefly describe data hazards.
- 2. Point out the different types of data dependences.
- 3. Differentiate between VLIW and EPIC Processors.
- 4. Briefly describe about the Register Stack Mechanism in IA-64 Register model.
- 5. What is the use of branch prediction buffer?
- 6. Write a note on multiprocessor cache coherence.
- 7. Point out how RAID can improve the performance of I/O.
- 8. What is the need to implement memory as a hierarchy?
- 9. Enlist the features of SMT Architecture.
- 10. Point out the advantages and disadvantages of heterogeneous multi-core processors.

PART B —  $(5 \times 16 = 80 \text{ marks})$ 

11. (a) Explain how compiler technology can be used to enhance a processor's ability to exploit ILP.

Or

(b) What are the different ways for branch prediction? Discuss how pipeline performance issues can be reduced by branch prediction.



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12. (a) Discuss about Itanium processor and its IA 64 Instruction Set architecture.

Or

- (b) What is speculative execution? Compare and contrast hardware and software speculation mechanisms.
- 13. (a) Discuss in detail about the performance issues in symmetric and distributed shared memory architectures.

Or

- (b) What is the need of memory consistency model? Explain its various types.
- 14. (a) Describe the need of cache optimization scheme. Give a description about the advanced cache optimization schemes to reduce cache miss penalty and miss rate.

Or

- (b) Elaborate on the different methods to measure the performance of I/O.
- 15. (a) Compare and contrast Intel Multi core architecture and SUN CMP Architecture.

Or

(b) What is hardware multithreading? Compare and contrast Fine grained Multi-Threading and Coarse grained Multi-Threading.

