Code No: 07A70504 **R07** **Set No. 2**

IV B.Tech I Semester Examinations,November 2010
ADVANCED COMPUTER ARCHITECTURE
Computer Science And Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) When do you say a memory system is coherent?
   (b) Explain about "write serialization". [8+8]
2. What is the key idea to implement speculation? Discuss. [16]
3. (a) Explain the congestion control. How can it be reduced?
   (b) Give the switch topologies for eight nodes. [8+8]
4. Clearly bring out the difference between hardware and software speculation mechanism. [16]
5. (a) Give the applications of the interrupt driven IO.
   (b) Write about the bit interleaved parity. Give an example comparing RAID 3 and RAID 4/5 on small write updates. [8+8]
6. (a) Give an example for three level hierarchical page table and explain.
   (b) Explain how page size is selected. [8+8]
7. (a) Explain Amdhal's law?
   (b) Find the number of dies for 30 cm wafer for a die that is 0.7cm on a side.[8+8]
8. Clearly bring out the difference between fixed instruction encoding and variable instruction encoding. [16]

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Code No: 07A70504 **R07** **Set No. 4**

IV B.Tech I Semester Examinations,November 2010
ADVANCED COMPUTER ARCHITECTURE
Computer Science And Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. List out the three popular choices for encoding the instruction set. Explain each in detail?. [16]
2. Explain data dependent hazard with example? [16]
3. (a) Give the message format of the simple network and the steps to send a message and message reception?
   (b) Explain about the terms bandwidth, time of flight, transformation time.[10+6]
4. (a) How are conflict misses reduced?
   (b) What is Write back and write through cache? [8+8]
5. What are the four methods that support speculation without introducing erroneous exception behavior? [16]
6. (a) Classify fault and fault tolerance techniques.
   (b) What is meant by polling? [8+8]
7. (a) Define spatial locality.
   (b) Define temporal locality
   (c) Give a note on SPEC? [4+4+8]
8. Describe as briefly as possible the cache consistency issues in the following situations (some of them do overlap- - - - explain):
   (a) Separate caches for instructions and data.
   (b) Direct memory access for peripherals.
   (c) Multiple processors. [6+5+5]

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Code No: 07A70504 **R07** **Set No. 1**

IV B.Tech I Semester Examinations,November 2010
ADVANCED COMPUTER ARCHITECTURE
Computer Science And Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Write short notes on:
   (a) Strided addressing.
   (b) Little endian and big endian formats. [8+8]
2. (a) Give the Categories of misses and discuss their occurance.
   (b) What is meant by Thrashing? [8+8]
3. What is instruction level parallelism? Explain in detail with an example. [16]
4. What are the three capabilities that are required to speculate ambitiously? Explain in detail? [16]
5. (a) How to prevent coherence problem in a scalable multiprocessor supporting shared memory? what are the disadvantages?
   (b) Discuss about directory protocol. [8+8]
6. (a) What are the major functions of an I/O module?
   (b) What is the difference between memory mapped I/O and isolated I/O?
   (c) What is meant by direct memory access? [6+5+5]
7. Explain measuring and Reporting performance in computer design. [16]
8. (a) Explain how I/O performance can be measured.
   (b) Give the steps in designing an I/O system. [8+8]

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Code No: 07A70504 **R07** **Set No. 3**

IV B.Tech I Semester Examinations,November 2010
ADVANCED COMPUTER ARCHITECTURE
Computer Science And Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Define Temporal locality.
   (b) Explain about wall clock time in detail? [4+12]
2. What are the decisions and transformations that we had to make to obtain final unrolled code? Discuss. [16]
3. (a) Write short notes on:
      i. Fibre optic Components
      ii. Fibre Optic Cables
      iii. Wavelength division multiplexing.
   (b) Briefly Write about the performance parameters of interconnection networks. [8+8]
4. What are the three ideas that hardware speculation make use of? Explain. [16]
5. (a) What is meant by multilevel inclusion and multilevel exclusion and explain their advantages and disadvantages?
   (b) Explain about merging write buffer. [8+8]
6. What are the different control flow instructions present and explain each with an example. [16]
7. (a) Explain how to convert thread level parallelism into instruction level parallelism.
   (b) List the disadvantages of coherence implemented in software. [8+8]
8. (a) What is the meant by flash memory and explain? What is the difference between the flash memory and PROM?
   (b) Compare the times to read and write a 64KB block to a flash memory and magnetic disk. For flash assume it takes 65ns to read 1byte, 1.5μs to write 1byte, and 5ms to erase 4KB. Assume the measure seek time is $1/3^{rd}$ of the calculated average, the controller overhead is .1ms and the data stored in the outer tracks ,give it the faster transfer rates. [8+8]

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