



- Notes :
1. All questions carry equal marks.
  2. Due credit will be given to neatness and adequate dimensions.
  3. Assume suitable data wherever necessary.
  4. Illustrate your answers wherever necessary with the help of neat sketches.
  5. Solve **any five** questions.

1. a) With suitable diagram, explain interleaved memory organization. **8**  
b) Compare and contrast the following terms: **6**
  - i) Implicit and explicit parallelism.
  - ii) Static network and dynamic network.
2. a) Suppose we want to enhance the processor used for Web serving. The new processor is 10 times faster on computation in the Web serving application than the original processor. Assuming that the original processor is busy with computation 40% of the time and is waiting for I/O 60% of the time, what is the overall speedup gained by incorporating the enhancement? **8**  
b) What is dynamic scheduling? How does it help to avoid data Hazards. **6**
3. a) Explain in detail how the pipelining is implemented with reference to a MIPS processor? **8**  
b) Explain the basic VLTW approach for exploiting ILP, using multiple issues. **6**
4. a) Explain the directory based cache coherence for a distributed memory multiprocessor system along with state transition diagram. **8**  
b) What are the different cache configurations? What is a valid bit with reference to cache? **6**
5. a) Explain Hierarchical Bus System with suitable diagram. **8**  
b) Write a note on vector super computers. **6**
6. a) What is data dependency? Explain with an example what are the hazards that can happen in pipeline system because of the data dependency? **8**  
b) Explain multiprocessing MIMD mode. **6**
7. a) Discuss hardware based speculations and compare it with software based speculation. **8**  
b) With suitable example, explain blocking and non-blocking networks. **6**
8. a) What are different types of storage devices? Explain flash memory with suitable diagram. **8**  
b) Compare the followings: **6**
  - 1) Shared memories and distributed memories.
  - 2) Static network and dynamic network.

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