[5155] - 268

M.E. (Computer Engineering)
ADVANCED COMPUTER ARCHITECTURE
(2013 Pattern)

Time : 3 Hours]   *[Max. Marks : 50*

Instructions to the candidates :

  1)   All Questions are compulsory.
  2)   Neat diagrams must be drawn wherever necessary.
  3)   Figures to the right indicate full marks.
  4)   Assume suitable data, if necessary.

Q1) a)   What is shared memory concept? Explain the different shared memory multiprocessor models.   **[5]**

   b)   What is the significance of PRAM models? Describe the four variants of PRAM model   **[4]**

OR

   a)   State granularity for parallel processing. Explain the granularity at various levels.   **[5]**

   b)   How Flynn has classified parallel computers? Why MISD architecture does not exist?   **[4]**

Q2) a)   What scalability determine. List & explain the factors affecting scalability.   **[4]**

   b)   Explain the Gustafson's for fixed time speed for scaled program sizes.**[4]**

OR

   a)   Derive Amdahl's speedup performance law Explain benchmark standards.   **[4]**

   b)   What is the degree of parallelism. Describe average parallelism in terms of DOP.   **[4]**

P.T.O.

Q3) a) Can pipeline increase the throughput. Explain the instruction & processor pipeline. **[4]**

b) Compare the RISC & CISC architectures. **[4]**

OR

a) Comment on how the superscalar can increase performance with VLIW architecture. **[4]**

b) Explain the memory hierarchy. What are the three locality properties in memory references. **[4]**

Q4) a) What is cache coherency problem. How the directory based protocol overcome the problem updating the cache blocks. **[5]**

b) State the latency hiding techniques . Explain the relaxed memory consistency. **[4]**

OR

a) What is vectorization & instruction types? Explain the distributed memory model in SIMD computer organization **[5]**

b) Discuss the dataflow architecture. Explain with dataflow graph with example. **[4]**

Q5) a) Convert following scalar code to vector code **[4]**

Do 20   I = 1, N

        A (I) = B (I) + C (1)

20   B (I) = 2 * A (I + 1)

Explain techniques used to convert code to optimized code with example

b) Explain the features of parallel programing languages for program development. **[4]**

OR

a) What conditions are for better critical section? Explain message passing & shared memory model. **[4]**

b) Explain the semaphore & monitor to improve the processor utilization. **[4]**

Q6) Explain in brief the following (any two) [8]

    a) Neuro computing

    b) Grid computing

    c) Quantum computing

<div align="center">OR</div>

Draw & explain layered architecture of cloud? What are the security threats in the cloud & services provided. [8]

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