MCA/M-16
ADVANCED COMPUTER ARCHITECTURE
PAPER- MCA-14-42

Compulsory Question

1. Answer the following questions in brief :

   (a) Distinguish between abstract and concrete architecture.

   (b) What is performance potential of a pipeline? Explain.

   (c) Distinguish between precise and imprecise interrupts.

   (d) What are limitations of delayed branch handling?
   (e) Distinguish between write-through and write-back memory updation policies.
   (f) What are limitations of full-map directory scheme?
   (g) Draw the diagram of hypercube of degree-four.
   (h) What are network performance parameters for tree of size N nodes?

UNIT-I

2. What is computational model? Compare Von-Neumann and Applicative computational model.

3. (a) What are false dependencies among instructions? Explain with suitable examples.

   (b) Explain global scheduling technique used in ILP processors.

UNIT-II

4. (a) What is shelved issue? Discuss the layouts of shelving buffers.

   (b) Compare VLIW AND SUPERSCALAR ARCHITECTURES.

5. (a) What are dynamic prediction schemes for branches? Explain.

   (b) What the branch penalties? Discuss multi-way branching technique to reduce penalties.

UNIT-III

6. What is NUMA model? What are its limitations? How are these limitations overcome by CC-NUMA model? Explain with the help of suitable diagrams.

7. Explain the following static interconnection networks along with their performance parameters; barrel shifter, ring, 2D Torus and 3-cube connected cycles.

UNIT-IV

8. (a) What is centralized arbiter logic? What are limitations of this logic? How daisy chaining overcome these limitations?

   (b) What is MIN? Explain the working of Butterfly network with suitable diagram.

8. What are causes of cache coherence problem? Explain snoopy protocol with the help of state transition graph.