BT-6/M-21 **46167**

ADVANCED COMPUTER ARCHITECTURE
Paper : PE-CS-S302A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *five* questions in all, selecting at least *one* question from each unit. All questions carry equal marks.

UNIT–I

1. (a) What is a Computational Model? Describe the von Neumann Computational Model.

   (b) What are the different classes of parallel computer architecture?

2. (a) What are the different types of parallelism in Processing Execution? Explain instruction level parallelism using an example.

   (b) What are the features of VLIW Architecture? Illustrate using a block diagram and mention its advantages and disadvantages.

UNIT–II

3. HIghlight the emergence of Superscalar Processors. What are the specific tasks of superscalar processing? Give a brief overview of each.

4. Explain the concept of Branch Handling along with its effect. Also describe in brief the various branch handling techniques.

UNIT–III

5. What is the difference between Uniform Memory Access (UMA) and Non-Uniform Memory Access (NUMA) multiprocessors? How do COMA and CC-NUMA machines reduce the problems of NUMA? What are the differences between COMA and CC-NUMA?

6. List the well-known static networks and illustrate them diagrammatically with a brief description of each.

UNIT–IV

7. Why are computer's memory systems typically built as hierarchies? Give an overview of memory hierarchy design and its characteristics in the context of computer architecture. Explain inclusion, coherence and locality of reference properties of memory hierarchy.

8. What is the difference between Virtual memory and Cache memory? What is Cache Coherence problem and how can it be avoided? What are the common mechanisms of Ensuring Coherency?

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