Roll No. 28/9021 Total Pages : 02

BT-6/M-22 46167

ADVANCED COMPUTER ARCHITECTURE
PE-CS-S302A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question each from Unit I to Unit IV. All questions carry equal marks.

Unit I

1. Discuss the relationship between programming languages and parallel architecture. Explore the computer architecture as a multilevel hierarchical framework. 15

2. (a) What do you mean by instruction level parallel processors ? Discuss about code scheduling for ILP processors. 8

   (b) Outline the general structure of Pipelines. List the principles and performance measures of pipeline. 7

Unit II

3. What are superscalar processors ? How these processors are different from VLIW ? Describe the tasks of superscalar processing.

4. (a) What is branch problem in computer architecture ? Discuss branch detection and prediction scheme. 8

(b) Write a note on guarded execution. 7

Unit III

5. Differentiate between the following :

(a) Shared memory and Distributed memory MIMD architecture 8

(b) UMA, NUMA and CCNUMA. 7

6. (a) Discuss in detail the design space of static interconnection topology. 8

(b) Write notes on the following : 7

(i) Single shared bus

(ii) Omega network.

Unit IV

7. Briefly explain the following :

(a) Memory hierarchy technology 8

(b) Cache coherence problem. 7

8. Discuss the design space of software based protocols and hardware based cache protocol and cache coherence protocol. 15