

**B.Tech. - VIEP - COMPUTER SCIENCE AND
ENGINEERING (BTCSVI)**

Term-End Examination

December, 2016

00283

**BICS-025 : ADVANCED COMPUTER
ARCHITECTURE**

Time : 3 hours

Maximum Marks : 70

Note : Answer any **seven** questions. All questions carry equal marks.

1. Draw an arithmetic pipeline for floating point addition with the help of an example. How many segments are required ? What are the suboperations performed in these segments ? 10

2. (a) Explain the timing diagram of an instruction pipeline. What is the purpose of each segment ? 7

(b) What are the three major difficulties that cause the instruction pipeline to deviate from its normal operation ? 3

3. Discuss and differentiate the Uniform Memory Architecture (UMA) and Non-Uniform Memory Architecture (NUMA) for multiprocessor systems. 10

4. Describe the following terms in the context of interconnection network : 10
- (a) Blocking
 - (b) Multicast and Broadcast
 - (c) Bisection Bandwidth
 - (d) Throughput
5. (a) Make a dataflow graph of the following expression evaluation : 4
- $$f = (x + y) * (x - a) / (t - b)$$
- (b) Explain Flynn's classification of parallel computers and the important characteristics of each. 6
6. Describe the following topologies with appropriate design : 10
- (a) Hypercube
 - (b) Mesh Network
 - (c) Bus Network
 - (d) Ring Network
7. Explain the parallel sorting algorithm with the help of an example. Make suitable assumptions. 10
8. Explain five challenging applications of parallel processing. 10
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