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## Seventh Semester B.E. Degree Examination, Jan./Feb. 2021 Advanced Computer Architecture

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

### Module-1

- 1 a. Explain Elements of modern computer system. (08 Marks)  
b. Explain Flynn's classification. (08 Marks)

OR

- 2 a. Explain Hardware and Software parallelism with examples. (08 Marks)  
b. Explain different levels of parallelism in program execution on modern computer. (08 Marks)

### Module-2

- 3 a. With a neat diagram, explain dataflow architecture. (08 Marks)  
b. Explain average parallelism, also derive the equation for average parallelism. (08 Marks)

OR

- 4 a. Explain the important characteristics of parallel algorithm. (08 Marks)  
b. Explain grand challenge application areas in parallel processing. (08 Marks)

### Module-3

- 5 a. Explain Amdahl's law for a fixed workload. (08 Marks)  
b. Explain the basic metrics affecting the scalability of a computer system. (08 Marks)

OR

- 6 a. With a neat diagram, explain RISC and CISC processor. (08 Marks)  
b. With a neat diagram, explain VLIW processor and its pipeline operations. (08 Marks)

### Module-4

- 7 a. Explain Asynchronous and Synchronous model in linear pipeline processors. (08 Marks)  
b. Explain Seven stage instruction pipelines in Instruction pipeline design. (08 Marks)

OR

- 8 a. Explain different types of Internal data forwarding in Instruction pipelining (08 Marks)  
b. Explain computer arithmetic principles in arithmetic pipeline design. (08 Marks)

### Module-5

- 9 a. Explain symmetric shared memory architectures. (08 Marks)  
b. Explain distributed shared memory architectures. (08 Marks)

OR

- 10 a. Explain directory protocols. (08 Marks)  
b. Explain cache based directory protocols. (08 Marks)

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