

# CBCS SCHEME



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15EC754

## Seventh Semester B.E. Degree Examination, Aug./Sept. 2020 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 Flynn's classification. (08 Marks)  
b. Discuss the shared memory multiprocessors. (08 Marks)

OR

- 2 a. Briefly discuss the program partitioning and secluding with example. (08 Marks)  
b. Explain hardware and software parallelism. (08 Marks)

### Module-2

- 3 a. Compare control flow and dataflow interms of the program flow mechanism. (08 Marks)  
b. Explain data flow architecture with neat diagram. (08 Marks)

OR

- 4 a. Let  $n$  and  $\alpha$  be the percentage of a program code which can be executed simultaneously by  $n$  processors in a computer system. Assume that the remaining code must be executed sequentially by a single processor. Each processor has a execution rate of  $X$  MIPS, and all processors are assumed equally capable. Derive an expression for the effective MIPS rate when using the system for exclusive exaction of this program, in terms of the parameters  $n$ ,  $\alpha$  and  $X$ . (08 Marks)  
b. If  $n = 16$  and  $n = 400$  MIPS determine the values of  $\alpha$  which will yield a system performance of 4000 MIPS. (08 Marks)

### Module-3

- 5 a. Derive Amdahl's law as a special case of the  $S_n^*$  expression. (08 Marks)  
b. What are the basic metrics affecting the scalability of a computer system? Explain. (08 Marks)

OR

- 6 a. Explain the characteristics of typical CISC and RISC architectures. (08 Marks)  
b. Explain the VLIW architecture. (08 Marks)

### Module-4

- 7 a. Discuss the asynchronous and synchronous models in linear pipeline processor. (08 Marks)  
b. Explain the mechanism for instruction pipelining. (08 Marks)

OR

- 8 a. Explain cache basic and performance in memory hierarchy design. (08 Marks)  
b. Briefly discuss the main memory organization. (08 Marks)

### Module-5

- 9 a. Explain cache coherence problem with example. (08 Marks)  
b. Discuss the directory based protocols. (08 Marks)

OR

- 10 a. Briefly discuss the memory based directory protocols. (08 Marks)  
b. Explain cache based directory protocol. (08 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.