Department of Computer Science Engineering

CONTINUOUS ASSESSMENT TEST-II

Subject : COMPUTER ARCHITECTURE **Year/Sem : II/IV**		**Subject Code** **Branch**	**:CS8491** **: CSE&IT**
Date/Session : 22.04.2021 /FN		**Time** **Marks**	**: 1 ½ Hrs** **: 50**
Answer ALL Questions **Part – A (5x2=10 Marks)**			

1. What are the advantages of pipelining? (CO4) (K2)

2. Define Sign extend and branch prediction buffer. (CO4) (K2)

3. Difference between strong scaling and weak scaling.(CO5) (R2)

4. Distinguish SRAM and DRAM. (CO6) (K1)

5. Define Memory Hierarchy. (CO6) (K1)

Part – B (2x13=26 Marks)

6. (a) (i)Design a simple datapath with the control unit and explain in detail. (13) (CO4) ((K3))

Or

(b) (i) What is pipelining? Discuss about pipelined datapath and control. (13) (CO4) (K3))

7. (a) i) Explain Flynn's classification with neat diagrams. (CO5) (K2) (7)
ii) Suppose you want to perform two sums: one is a sum of 10 scalar variables and one is a matrix sum of a pair of two- dimensional arrays, with dimensions 10 by 10. For now let's assume only the matrix sum is parallelizable; we will see soon how to parallelize scalar sums. What speed-up do you get with 10 versus 40 processors? Next calculate the speed ups assuming the matrices grow to 20 by 20. (6) (CO5) (K2)

Or

(b) i) Explain Hardware Multithreading with neat diagrams. (CO5) ((K2) (7)
ii) Discuss the challenges in parallel processing with necessary examples. (CO5) (K2) (6)

Part – C (1x14=14 Marks)

8. (a) (i) Explain in detail about the memory technologies? (10)(CO6) (K1)

(ii) How many total bits are required for a direct mapped cache with 16 KB of data and 4 word blocks, assuming a 32 bit address.(4)(CO6) (K1)

Or

(b) (i) what is the need for Cache memory? List the three mapping methods of cache memory and explain. (14) (CO5) (R)

Course Outcomes:

CO1: Understand the physical and logical aspects of Computer System

CO2: Analyze the various parameters of the processor to improve system performance.

CO3: Evaluate the fixed and floating point arithmetic operations.

CO4: Design data path and control unit of computer system.

CO5: Understand parallel processing architectures with pipelining and avoidance of hazards

CO6: Define the various components of computer system hardware.

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