No. of Printed Pages : 04

Following Paper ID and Roll No. to be filled in your Answer Book.

PAPER ID : 23219 Roll No.

B. Tech. Examination 2021-22

(Even Semester)

ADVANCED COMPUTER ARCHITECTURE

Time : Three Hours]   *[Maximum Marks : 60*

Note :– Attempt all questions.

SECTION – A

1. Attempt all parts of the following : $8 \times 1 = 8$

   (a) What is your consideration about degree of parallelism?

   (b) What do you mean by quality and redundancy of parallelism?

   (c) Define limitations of instruction level pipelining.

   (d) Explain cache coherency in brief.

[P. T. O.

(e) Explain instruction level and data level parallelism.

(f) What is systolic architecture of parallel computational model?

(g) What do you mean by total parallel overhead?

(h) What do you mean by cost-optimal parallel algorithm?

SECTION – B

2. Attempt any two parts of the following : $2 \times 6 = 12$

(a) Discuss PRAM model of parallel computation.

(b) Describe parallel matrix multiplication algorithm on PRAM model.

(c) Differentiate between super scaler and super pipelined processor.

(d) Explain advance optimization of cache performance.

SECTION – C

Note :– Attempt all questions from this section.

$10 \times 4 = 40$

3. Attempt any two parts of the following :

    (a)   Define butterfly network model in detail.

    (b)   What is Amdahl effect? Also discuss Amdahl's law.

    (c)   Explain micro-architectural technique used to exploit instruction level pipeline.

4. Attempt any two parts of the following :

    (a)   A four stage pipeline has the stage delay as 150, 120, 160, 140 n.s. respectively and given latch delay is 10 n.s. Calculate :

        (i)   Pipeline cycle time

        (ii)   Speed up ratio

    (b)   Write a parallel algorithm for merging of two sorted lists.

    (c)   Explain multi-threaded architecture in detail.

5. Attempt any two parts of the following :

    (a)   Explain various parallel architectural classification scheme.

[P. T. O.

(b) What is pipeline? Discuss the pipeline conflict in detail.

(c) Write a cost-optimal parallel-algorithm for prefix sum.

6. Attempt any two parts of the following :

(a) Differentiate between associative and neural architectural model.

(b) Explain design strategies of parallel algorithm.

(c) Discuss De-Bruijn network.

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