CLASS:    BE                                          SEMESTER: VII
BRANCH:  CSE                                         SESSION : MO/2019

**SUBJECT : CS8029 PARALLEL AND DISTRIBUTED SYSTEMS**

TIME:    1.5  HOURS                                  FULL MARKS: 25

**INSTRUCTIONS:**
1. The total marks of the questions are 30.
2. Candidates may attempt for all 30 marks.
3. In those cases where the marks obtained exceed 25 marks, the excess will be ignored.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. The missing data, if any, may be assumed suitably.

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Q1  (a)  Explain the need of parallelism.                                                    [2]
    (b)  Give the classification of parallel computers (along with type of parallelism). Explain    [3]
         briefly each of them.

Q2  (a)  Explain the term '*inherently sequential*' problem. Give an example of such a problem.    [2]
    (b)  State Amdahl's law. If 90% of the computation can be parallelized, what is the maximum    [3]
         speedup achievable using 8 processors?

Q3  (a)  List out the characteristics of PRAM model of computers.                              [2]
    (b)  What do you mean by *processor activation* in PRAM model? Explain how it is performed    [3]
         and how much time is necessary for this process for *n* processors.

Q4  (a)  Discuss how CRCW PRAM model is managed.                                               [2]
    (b)  Devise a PRAM algorithm for merging two *sorted* lists of elements. Analyze the designed    [3]
         PRAM algorithm and the corresponding sequential algorithm.

Q5  (a)  What is *cost optimality*? Give an algorithm that illustrates cost optimal algorithm.    [2]
    (b)  Differentiate between *loosely coupled* and *tightly coupled* computers.                 [3]

Q6  (a)  Point out the advantages and disadvantages of *preschedule* and *self-schedule* data-    [2]
         parallel algorithms.
    (b)  Write a parallel algorithm for multiplying two matrices (of size nxn each) on 2-D Mesh    [3]
         SIMD model computer. Also, analyze the complexity of the designed algorithm.

::::: 23/09/2019M ::::::