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M.Tech. (Sem. - 3rd)

PARALLEL COMPUTING

SUBJECT CODE : CS-517

Paper ID : [E0697]

[Note : Please fill subject code and paper ID on OMR]

Time : 03 Hours **Maximum Marks : 100**

Instruction to Candidates:

1) Attempt any **Five** questions.
2) **All** questions carry equal marks.

Q1) What are different paradigms of parallel computing? Discuss all of them in detail.

Q2) Discuss the following:

a) Flynn's classifications.

b) Handler's Classifications.

c) Kung's taxonomy.

d) SPMD.

Q3) a) There are many abstract parallel computational models. All have their own merits and demerits. Discuss in relative terms.

b) What you understand by shared memory multiprocessors. How they are different from the multiprocessors having their own memory. Different applications may run in a better way in one of these configurations. Classify such applications.

Q4) a) Write an algorithm for sorting a given set of numbers using parallel programming.

b) What are the main structures/techniques used for parallelizing a sequential program.

Q5) Write in detail about performance metrices and the laws governing performance metrices. Take into account all the parameters like speedup, efficiency, utilization etc.

Q6) a) Running a program on two parallel processors does not halve the complexity of the algorithm. What are the reasons for it?

b) Discuss different types of overheads associated with parallel processing.

Q7) a) What are the types of operating systems used for parallel processing? How they are different form the normal OS.

b) What are the various software tools available for parallel processing? Discuss any two.

Q8) Write note on the following:

a) Distributed memory networks.

b) Cloud computing.

c) Control Parallelism.

d) Dynamic interconnections.