

CA 039: Parallel and Distributed Computing
MCA 3rd Year, 1st Semester
End Semester Test

166

Time Allowed: 3 Hr.

Max. Marks 36

Note: - Question No. 1 is compulsory. Attempt any four out of remaining six.

- Only first five attempted questions will be checked.

- All parts of a question must be attempted together otherwise first attempted part(s) will be checked.

- Make assumptions, if required, with reasoning.

Q1.a) Differentiate between Remote Procedure Call (RPC) and Message Passing Architecture. (3)

b) Differentiate between Bisection Bandwidth and Channel Bandwidth. (3)

c) Explain the NORMA architecture with the help of diagram. (2)

Q2. a) List and explain the features of a data flow computer that differentiate it from a conventional computer. (4)

b) List and explain the main features of followings (as given below), in context of Operating System for SMP (Shared Memory Processor) systems.

(i) Operating System Configurations

(ii) Programming Model

(iii) Implementation Issues (3)

Q3. a) What are the basic issues for the selection of RPC protocol? Illustrate. (4)

b) List and explain the 3 ways for locating the server in RPC. (3)

Q4. a) Explain the three major compilation phases (for parallel code generation) in a parallelizing compiler with the help of diagram. (4)

b) List and explain techniques for reducing contentions in shared memory systems. (2)

c) What do you mean by all-to-all reduction? Explain. (1)

Q5. a) Do you agree with the following statement?

“SIMD requires less hardware and less memory than MIMD.” Justify your answer. (3)

b) List and explain the performance metrics for parallel systems. (2)

c) List and explain the flow control strategies for resolving a collision between two packets requesting the same outgoing channel. (2)

Q6. a) Differentiate between RPC and Local (Normal) Procedure Call (3)

b) Distinguish between implicit parallelism and explicit parallelism with the help of diagram(s). (2)

c) Explain all the architectural schemes (with the help of diagrams) on the basis of Flynn's classification. (2)

Q7. a) What do you mean by one-to-all broadcast and all-to-one reduction? Explain the one-to-all broadcast and all-to-one reduction for eight-node ring with the help of diagrams. (5)

b) Write and explain the algorithm for all-to-all broadcast for a p-node ring. (2)