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*B.Tech. (Sem. - 5th)*

**PARALLEL ARCHITECTURE AND COMPUTING**

**SUBJECT CODE : IT - 309**

**Paper ID : [A0518]**

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

[...e : 03 Hours] **Maximum Marks : 60**

**[...tructions to Candidates:**

1) **Section - A is Compulsory.**
2) **Attempt any Four questions from Section - B.**
3) **Attempt any Two questions from Section - C.**

## Section - A

*(10 × 2 = 20)*

a) What are the types of parallel architectures according to the Flynn's classification?

b) What is a reservation table?

c) What are interconnection networks? What is their importance?

d) Distinguish between NUMA and UMA.

e) Name various PRAM models.

f) What are control hazards?

g) What is the equation for the Amdahl's law?

h) What is pipelining?

i) What is parallel prefix computing?

j) What is an instruction pipeline?

## Section - B

*(4 × 5 = 20)*

*Q2)* Explain how parallelism is achieved in uni-processor system.

*Q3)* Explain the Handler's classification in detail.

*Q4)* Distinguish between data and control parallelism approaches of computation.

*Q5)* What is crossbar switch network? Give any two disadvantages of crossbar switch network.

*Q6)* Write EREW PRAM algorithm to find sum of n elements using n/2 processors.

## Section - C

*(2 × 10 = 20)*

*Q7)* What are different parallel algorithms for SIMD architectures?

*Q8)* What are the data and control hazards and also suggest the methods for removing them.

*Q9)* Describe in detail PRAM model of parallel computing along with its variants. Draw the complete diagrams wherever required.