## M.Sc. 3rd Semester Examination, 2018

### PARALLEL COMPUTING

### PAPER – COS-302

*Full Marks* : 40

*Time* : 2 hours

Answer any **two** questions

*The figures in the right hand margin indicate marks*

*Candidates are required to give their answers in their own words as far as practicable*

*Illustrate the answers wherever necessary*

1. (*i*) Name two network architectures prevalent in machine supporting the message passing paradigm.

   (*ii*) Explain with a neat diagram the message passing paradigm.

   (*iii*) Explain with a neat diagram the shared *memory* architecture.

(*iv*) Differentiate between the shared memory architecture and message passing architecture.

(*v*) What are the basic advantages of parallel programming over sequential programming.

$$2 + 4 + 4 + 4 + 6$$

2. (*i*) How can we decompose a parallel task ? Explain each of them with proper diagram.

(*ii*) How do we measure the performance of a parallel processor ? If 5% of the total program is sequential then what will be the speedup for the parallel machine.

(*iii*) What is cache coherence ?

(*iv*) Explain the hypercube interconnection with diagram. What is the diameter of an $n$-node hypercube ? $(2+6)+(3+2)+2+(4+1)$

3. (*i*) Explain modern multiprocessor architecture with proper diagram.

(*ii*) Explain butterfly interconnection network with proper diagram.

( *Continued* )

(*iii*) Explain the execution model of open MP.

$$10 + 4 + 6$$

4. Write short notes on :                                    $5 \times 4$

   (*i*)  Relaxed consistency model of open MP

   (*ii*) *n*-dim grid interconnection

   (*iii*) Fermi processor

   (*iv*) Masper process.

[ *Internal Assessment* — 10 marks ]

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