

Code No: 155AA

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech III Year I Semester Examinations, January/February - 2023****ADVANCED COMPUTER ARCHITECTURE****(Common to CSE, IT)****Time: 3 Hours****Max. Marks: 75**

- Note:** i) Question paper consists of Part A, Part B.  
ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.  
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

**PART - A****(25 Marks)**

- 1.a) What is a parallel computer? [2]
- b) List the advantages of parallelism to improve performance. [3]
- c) Why do we need virtual memory in computer architecture? [2]
- d) List the advantages of virtual memory. [3]
- e) State the need for a cache memory. [2]
- f) Draw the Instruction Pipeline design. [3]
- g) What is compound vector processing? [2]
- h) List the three Generations of Multicomputers. [3]
- i) Write the disadvantages of multithreading. [2]
- j) Define fine-grained and coarse-grained parallelism. [3]

**PART - B****(50 Marks)**

- 2.a) Outline the classification of parallel computer models.
  - b) Discuss about the PRAM model. [5+5]
- OR**
- 3.a) Describe the program flow mechanisms in detail.
  - b) What are the conditions of parallelism? Explain. [5+5]
- 4.a) Outline the Memory Hierarchy with a neat diagram.
  - b) Discuss the applications of parallel processing. [5+5]
- OR**
5. Explain the need of superscalar processors and vector processors. [10]
  6. Elaborate on the Non-Linear Pipeline Processors. [10]
- OR**
7. Describe the Sequential and weak consistency models. [10]

8. Explain the cache coherence and synchronization mechanism. [10]  
**OR**
9. Explain in detail about Message –passing mechanisms. [10]
- 10.a) Elaborate on the Dataflow and hybrid Architecture.  
b) What is Multithreading? Explain the principles of Multithreading. [5+5]  
**OR**
11. Discuss about Latency-hiding techniques. [10]

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