BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)
B. Tech. Sem - VII Computer Science & Engineering AI & ML : WINTER: 2025
SUBJECT: HIGH PERFORMANCE PARALLEL COMPUTING

Day : Tuesday
Date : 09/12/2025

W-23984-2025

Time : 02:30 PM-05:30 PM
Max. Marks : 60

N.B :

1) All questions are **COMPULSORY.**
2) Figures to the right indicate **FULL** marks.
3) Draw neat and labeled diagrams **WHEREVER** necessary.
4) Use of non programmable **CALCULATOR** is allowed.
5) Assume suitable data if necessary.

Q.1 What are the challenges in SHARED Memory architecture? **(10)**

OR

Q.1 How is intercommunication different in cluster computers and parallel processes in massive parallel code? **(10)**

Q.2 For evaluating parallel program, we have 03 basic types of time complexity, namely "Polynomial", Exponential" and "Logarithmic". Give simple and suitable example expressions of all 03 types of time complexity.

OR

Q.2 Merge sort is very popular example, develop a logic to explain its working as per the implementation in parallel system. **(10)**

Q.3 Give logical diagram of TREE BASED implementation of synchronized. Also state its relative advantages and drawback. **(10)**

OR

Q.3 Explain HEAT DISTRIBUTION problem and include the following features in your demonstration. **(10)**

- LOCAL Synchronization.
- Syntax and parameters used in send ( ) and recv ( ) function

Q.4 What are the main factors of interconnection structure that influences performance of parallel architecture. **(10)**

OR

Q.4 What are the various popular interconnection structures used for designing of parallel systems? Give diagram and its advantages and drawback. **(10)**

Q.5 Why is distributed terminal detection difficult? Explain "Fixed Energy Distribution Algorithm". **(10)**

OR

Q.5 Give a Pseudo code for hill climbing problem in parallel system. Explain all variables / Functions used and support your answer with required diagram. **(10)**

Q.6 State drawback of distributed memory programming environment. **(10)**

OR

Q.6 Give programme structure of Open MP environment. **(10)**

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