B.E. Eighth Semester (Computer Technology) (C.B.S.)

Elective - III : Parallel Computing

P. Pages : 2 **NKT/KS/17/7599**

Time : Three Hours * 0 7 5 9 * Max. Marks : 80

Notes :
1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.
8. Due credit will be given to neatness and adequate dimensions.
9. Assume suitable data whenever necessary.
10. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) Explain parallelism in sequential machines and also explain each of parallelism techniques used in uniprocessor machines. **7**

b) What is Random Access Machine? Explain about P-RAM and its importance in parallel computer. **6**

OR

2. a) What is parallel programming model? Explain each parallel programming models used by programmers. **7**

b) Write short note on following. **6**
i) Characteristics of multiprocessor Architecture.
ii) Classification of pipeline processor.

3. a) What is Data Dependency? Explain types of Data Dependencies with proper examples. **5**

b) Explain the following program Transformation with examples. **8**
i) Induction variables.
ii) Forward Dependency.
iii) Loop splitting.
iv) Loop Interchange.

OR

4. a) How Diophantine equation is useful for dependency analysis? Explain with proper example. **7**

b) Explain shared memory programming and its general model in detail. **6**

5. a) Explain the following parallel sorting algorithms:- **6**
i) Parallel Quick – sort.
ii) Block sorting Algorithm

b) Explain Quadrature problem and Adaptive Quadrature Algorithm in detail. **7**

OR

6. a) Explain the approach used to implement matrix multiplication on Loosely coupled multiprocessor and Tightly coupled multiprocessor. **6**

b) Explain probabilistic Algorithm by help of Monte Carlo Integration. **7**

7. a) Explain the circuit satisfiability problem and solve it by using message passing programming. **6**

b) Write short note on following. **8**
i) Fortran – 90
ii) C – Linda.

OR

8. a) Explain message – Passing programming model in detail. **6**

b) Write short note on following. **8**
i) Occam.
ii) n CUBE C

9. a) Explain the use of space time diagram in message passing programing for Debugging. And also comment on Debugging and its difficulties with parallel programs. **7**

b) Explain in brief Debugging and its techniques in parallel algorithm in shared memory model. **6**

OR

10. a) Explain Hierarchical memory structure used in parallel computing system with the help of diagram. **7**

b) Explain the importance of Virtual memory to implement parallel programs in detail. **6**

11. a) What is Data flow computing? Explain the use of static and dynamic data flow graphs. **7**

b) Explain how computing convolution problem and matrix multiplication problem solved by using systolic Architecture. **7**

OR

12. a) Explain Efficiency and speedup and also state and prove Amdahl's law. **7**

b) State and prove Karf – Flatt metric and also comment on it is best explain speedup. **7**

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