

B.E./B.Tech. (FT) DEGREE END SEMESTER EXAMINATIONS, NOV/DEC 2011
BRANCH: ELECTRONICS AND COMMUNICATION ENGINEERING

45

SEVENTH SEMESTER

EC507 – PARALLEL AND DISTRIBUTED PROCESSING

REGULATIONS: 2004

Time: 3 Hours

Max.Marks: 100

Answer ALL questions

PART A – (10 x 2 = 20 marks)

1. How do you compute the time taken by the CPU to execute a given program
2. List out the four variants of PRAM model
3. What do you mean by Synonym problem in Virtual memory?
4. Define Coherence and Locality property of memory units
5. Derive the formula for Speed up performance for pipelined Processor
6. What do you mean by super scalar processor?
7. Convert the following FORTRAN scalar loop into an equivalent one vector-add instruction

DO 20 I = 8, 120, 2

20 A(I) = B(I+3) + C(I+1)

8. List out the different ways of IPC in a multiprocessor systems
9. What is the difference between multitasking and multiprocessing system. Give an example.
10. List the various file operations in Distributed Systems

PART B – (5 x 16 = 80 marks)

11. Discuss the architecture of UMA, NUMA and COMA with a neat diagram
- 12 (a) Describe the organization of two virtual memory models for multiprocessor systems

(OR)

12 (b) With a neat diagram, explain the paging and segmentation mechanism employed in Intel i486 CPU

13 (a) With a neat diagram, explain the architecture of the MIPS R4000 instruction pipeline and describe the Internal Data forwarding technique to improve the throughput of the pipeline.

(OR)

13 (b) Discuss the Snoopy protocol and Directory based protocol in solving the multicache inconsistency problem in multicomputer and multiprocessor..

14 (a) Discuss Flow Analysis, Optimizations and Code Generation phases of parallelizing compiler briefly

(OR)

14 (b) Briefly investigate the following methods for vectorization of scalar code by considering an example code of your choice

- (i). Vector reduction
- (ii). Loop interchanging
- (iii). Loop distribution
- (iv). Node splitting

15 (a) Briefly discuss the following synchronization methods used in solving the problem of shared objects in concurrent processes

- (i) Mutual exclusion
- (ii) Semaphores
- (iii) Reader/Writer Locks
- (iv) Monitors

(OR)

15 (b) Briefly explain Distributed File Systems employed in any OS of your choice
