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P.E.S. College of Engineering, Mandya - 571 401
(An Autonomous Institution affiliated to VTU, Belagavi)
First Semester, M. Tech - VLSI Design and Embedded System (MECE)
Semester End Examination; Jan. - 2020
Multicore Architecture

Time: 3 hrs   Max. Marks: 100

Note: Answer **FIVE** full questions, selecting **ONE** full question from each unit.

UNIT - I

1 a.	Discuss in detail the end-end architecture view of a streaming multimedia content over the internet.	7
b.	Explain briefly Flynn's taxonomy in parallel computing platforms.	7
c.	Briefly discus Amdahl's law.	6
2 a.	Explain stock layout in a multi-threaded process.	5
b.	Briefly discus the mapping model of threads to process.	8
c.	Explain the flow of threads in an execution environment.	7

UNIT - II

3 a.	Explain common parallel programming patterns.	8
b.	Briefly discus error diffusion algorithm.	6
c.	Explain parallel error diffusion for multithread multipage situation.	6
4 a.	Explain operational flow of threads for an application.	5
b.	Briefly discuss fence mechanism in multicore environment.	5
c.	Explain the following concepts in threading:	
	i) Dead lock	10
	ii) Semaphores	

UNIT - III

5 a.	Explain thread creation, priority assignment and thread management for Microsoft**.**Net framework.	10
b.	With an example, explain thread synchronization process for Microsoft windows.	10
6 a.	Explain thread creation and synchronization process using P-thread functions.	10
b.	Explain process affinity as applied to threads and processors.	10

UNIT - IV

7 a.	Explain the schedule schemes in Open MP.	8
b.	Discuss briefly task queuing execution model with a neat diagram.	8
c.	Explain the challenges in threading a loop.	4

8	a.	Illustrate the usage of reduction clause in Open MP with an example and list the thumb rules / points to be taken care in its usage.	10
	b.	Explain performance oriented programming using Barrier and No wait.	10

UNIT - V

9	a.	Explain fine grained locking system with an example.	7
	b.	Explain thread safety functions with a neat diagram.	7
	c.	Explain memory contention in multi-core programs.	6
10	a.	Explain data organization for high performance in programming.	8
	b.	What is ABA problem? Explain the lockless implementation of a linked stack that may suffer from ABA problem.	8
	c.	Explain non-blocking algorithms in multicore programming.	4

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