PAPER ID-421745

Roll No: | | | | | | | | | | | | |

MTECH
(SEM II) THEORY EXAMINATION 2021-22
MULTI CORE ARCHITECTURE AND PROGRAMMING MULTI CORE ARCHITECTURE AND
PROGRAMMING

Time: 3 Hours | *Total Marks:70*

Note: **1.** Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. **Attempt *all* questions in brief.** **2 x 7 = 14**

Q no.	Question	Marks	CO
a.	Differentiate between Multiprocessor and Multi-Core architecture.	2	1
b.	Differentiate between Concurrency and Parallelism.	2	1
c.	Explain Hyper Threading technology.	2	2
d.	Describe Speedup in parallel environment.	2	2
e.	Define parallel programming construct.	2	3
f.	Explain barrier and Nowait in OpenMP.	2	4
g.	Describe Memory Reclamation Problem.	2	5

SECTION B

2. **Attempt any *three* of the following:** **7 x 3 = 21**

a.	Explain Flynn's Taxonomy for Parallel Computing.	7	1
b.	Illustrate different types of Parallel programming patterns.	7	2
c.	What is deadlock? Explain types of deadlocks.	7	3
d.	What is OpenMP. Explain OpenMP library functions and environment variable.	7	4
e.	Describe types of common parallel programming problems.	7	5

SECTION C

3. **Attempt any *one* part of the following:** **7 x 1 = 7**

a.	What is Amdahl's Law. Explain its performance criteria and its limitations in parallel computing.	7	1
b.	Describe the concept of Multithreading on Single Core and on Multi-core platforms.	7	1

4. **Attempt any *one* part of the following:** **7 x 1 = 7**

a.	Illustrate Data Decomposition with its limitation, in multithreaded environment.	7	2
b.	Demonstrate Error Diffusion algorithm? Illustrate how it can be parallelized in multi-threaded environment.	7	2

5. **Attempt any *one* part of the following:** **7 x 1 = 7**

a.	Describe Synchronization Primitives with the help of examples.	7	3
b.	Explain the threading API's for Microsoft .NET Framwork.	7	3

6. **Attempt any *one* part of the following:** **7 x 1 = 7**

a.	Explain the challenges in Threading a Loop. Explain loop carried dependence with the help of example.	7	4
b.	Demonstrate Data race condition with the help of appropriate examples.	7	4

7. **Attempt any *one* part of the following:** **7 x 1 = 7**

a.	Explain Heavily contended locks and Priority Inversion in detail.	7	5
b.	What is Non-blocking Algorithms. Explain in detail.	7	5