CPS Exam

Answer 3/4 questions

1 - Analysis & Design
2 - Multi-threading
3 - Distributed Parallelism }————————\
4 - GPU }————————————————————————|
Generally avoided

Analysis & Design

Metrics - efficiency / speedup
Flynn's Taxonomy

SISD | MISD
SIMD | MIMD

Amdahl's Law
[Lectures 1 and 2]
Speedup = SeqTime /ParTime Efficiency = Speedup / cores
Pipeline
Thread Pool

Multi-threading

Threads
Locks - mutexes etc
Futures
~Atomics
Race Conditions ——> Non-determinism ——> Locking ——> Deadlock | Livelock
OpenMP
Scheduling - pre-emptive / cooperative

Distributed Parallelism

Message Passing Interface (MPI)
Message passing
{Bandwidth & Latency}
I/O bound / CPU bound

GPU

Probably gonna ask to write an algorithm - monte carlo pi, matrix/vector addition
How GPU works
Problems on GPU