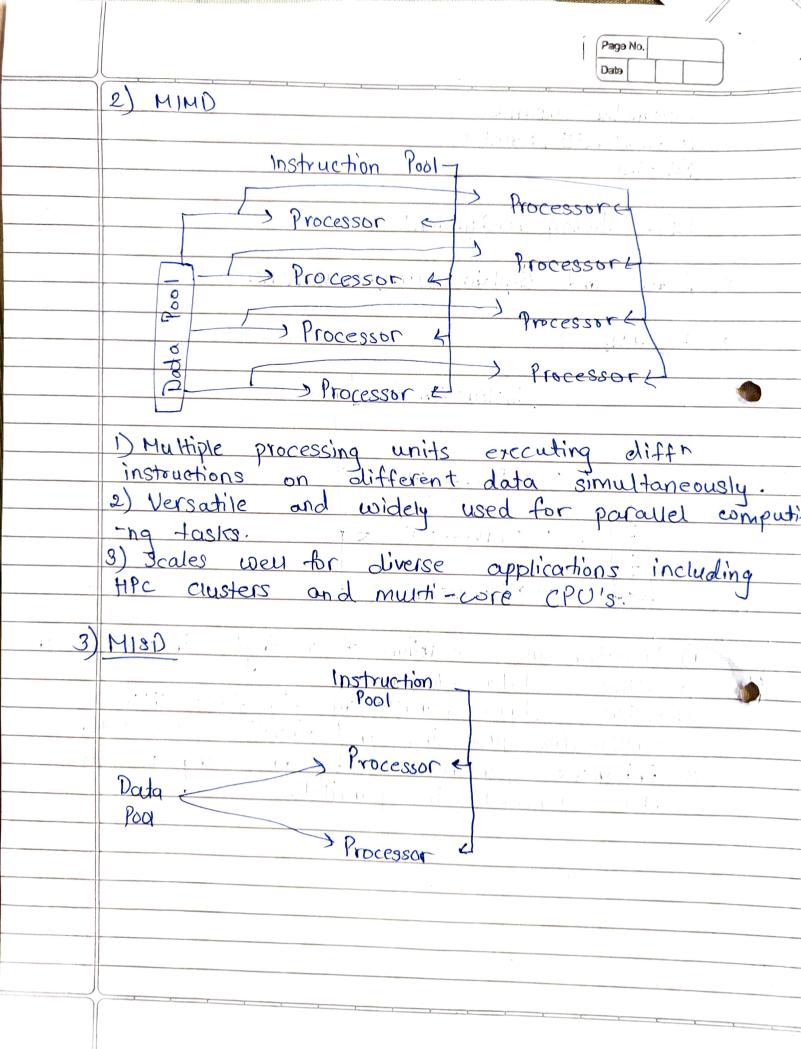
	Page No.
	Date
	Devenahu Surana
	Devanshu Surana 1032210755, Panel C
	PC-23 galandar
	HPC Theory Assignment
QI	Draw and Explain SIMD, MIMD, STSD
\rightarrow	1) SIMD 4 76233007 (
	Instruction Pool
,	11:1/2 partuouro i afigue popularizora sigistivia i
. 11/21	sound- 1 prince 3 to Process of the man another and
Ulary Co	Processor (Pyloph py
(11)	Processon to a restant of
\	Processorus to an Ristanto Square
	Las al anatolistas an
/ *	1) Simultaneous execution of a single instruction on multiple data elements. 2) Utilizes data parallelism for task like multimedia processing and scientific simulations. 3) Enhances performance by processing multiple
4	multiple data elements for took like
	2) Other dia processing and scientific simulations.
.	of therese accommonce by processing multiple
	data elements in parallel.
	dara Elananii
	- 100 mm 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1



. `	Page No.
	Date
100	iv) SISD:
~ 4	and the same of th
	Instruction
	1 () () () () () () () () () (
	Parties of the second s
	Pool Processor
, ,	1) Sequential execution of instructions on a single
	piece of data at a time.
· · · · · · · · · · · · · · · · · · ·	2) Traditional von Newman architecture with one
	processor executing instruction sequentialli
	3) Not efficient for parallel innovention this to ite
	processor executing instruction sequentially. 3) Not efficient for parauel computing due to its sequential nature.
<u>Q2</u>	Explain in detail the generic MPI program
	Structure
· in in ex	· primaronne MPHI include file une richardina
	J. Comments of the second of t
	Initialise - MPIA MARINE TO
1	en vironment
	- Torre manord ustrailly privative to a
	Do work and make Message parsing
	Message Parsing
	1 1 4 5 0 F - 3 0 V C - 3 0 F M 1 2
	Terminate MRI
- 4 1 - 1	environment
- 4	environment and
	1) MPI program start with initialization using
	environment and

send & MPI-Recu!

	LI La la bubble soct
9 3)	Explain odd-even transportation on bubble sort
	mains parallel dormillation
↔	In the context of paravel computing and
	hubble sort the odd-even transportation
	algorithm can be untilised to parallelise the
	sorting processes as tollows:
3	tlements mare incompared paralse and swapped
	e omit o to state to soil
200	Divide elements among processes initially
_	Each process sorts its subset with merge
3 H of	Each process sorts its subset with merge
_	Execute multiple phases not odd even
	tran sposition.
	were bright 1914 a viscope of the field of the pinty of the
	$\frac{1}{2}$
94)	Explain any 14 3 Parayell programming models.
94) —)	Explain any 4 Parallell programming models.
g4) →	\ \frac{1}{2}
g4) →	1) Task Graph Model: - Utilises task intermetationship
Ø4) →	1) Task Graph Model: - Utilises task intermetationship
Ø4) →	1) Task Graph Model: - Utilises task intermetationship
84) >	1) Task Graph Model: india
84) >	1) Task Graph Model: - Utilises task intermetationship
g4) →	1) Task Graph Model: - Utilises +ask interrelationship - Tasks mapped using task interaction graph. - Used with larger-data - computation varios. 2) Master-Slave model:
Ø4) →	1) Task Graph Model: - Utilises task intermedationship - Tasks mapped using task interaction graph. - Used with larger data computation varios. 2) Master-Slave model: - Master allocates work to slaves.
Ø4) →	1) Task Graph Model: - Utilises +ask interrelationship - Tasks mapped using task interaction graph. - Used with larger-data - computation varios. 2) Master-Slave model:
⊗ 4) →	1) Task Graph Model: - Utilises task interrelationship - Tasks mapped using task interaction graph. - Used with larger data computation votios. 2) Master-Slave model: - Master allocates work to slaves. - Tasks pre-autocated or dynamically assign-ed. - i Care needed to avoid master bottleneds.
⊗ 4) →	1) Task Graph Model: - Utilises task interrelationship - Tasks mapped using task interaction graph. - Used with larger data computation votios. 2) Master-Slave model: - Master allocates work to slaves. - Tasks pre-autocated or dynamically assign-ed. - i Care needed to avoid master bottleneds.
Ø4) →	1) Task Graph Model: - Utilises task intermedationship - Tasks mapped using task interaction graph. - Used with larger-data computation votios. 2) Master-Slave model: - Master allocates work to slaves. - Tasks pre-autocated or dynamically assign-ed.

Page No.	and the demonstration of the second s
Date	

- 3) Work-Pool model
 Dynamic task to process mapping for load
- balancing.

 Tasks can be performed by any processes.

 Centralised or decentralised mapping.

- Data stream passes through successive processes.
- Static mapping of tasks to processes.
 Grancularity affects piperine fill time and interaction overhead.
- 85) Explain the Schemes of static mapping techniques for minimizing lating in parallel computing environment.
- Schemes for static mapping:

 i) Mapping based on data partitioning

 Divide data among processing units based

 on workload balance, data locality or communi
 cation overhead.

 Ex: block cyclic distribute of scatter gather
 - strategies

 - 2) Hybrid Mapping:

 Hybrid mapping combines data and task
 partitioning.

 Optimizes presource units and minimizes
 idle time efficiently.