Reg. No.														

B.Tech. DEGREE EXAMINATION, MAY 2024
Sixth Semester

18ECE351T – HIGH PERFORMANCE COMPUTING FOR CYBER PHYSICAL SYSTEM
(For the candidates admitted from the academic year 2018-2019 to 2021-2022)

Note:
(i)   **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.
(ii)   **Part - B & Part - C** should be answered in answer booklet.

Time: 3 hours   Max. Marks: 100

PART – A (20 × 1 = 20 Marks)
Answer ALL Questions

		Marks	BL	CO	PO
1.	Which package is responsible for unified remote procedure calls?	1	2	1	1
	(A) Steam (B) File (C) RPC (D) Job				
2.	Utilization rate of resources in an execution model is known to be its	1	1	1	1
	(A) Adaptation (B) Efficiency (C) Dependability (D) Flexibility				
3.	Data centers and centralized computing covers many and_____	1	2	1	1
	(A) Micro computers (B) Mini computers (C) Main frame computers (D) Super computers				
4.	Even under failure condition, providing QoS assurance is responsibility of	1	1	1	1
	(A) Dependability (B) Adaptation (C) Flexibility (D) Efficiency				
5.	The similarity measure of the member job description must be higher than a_____	1	2	2	1
	(A) Threshold (B) Speed (C) Access ratio (D) Area				
6.	What are the performance metrics for parallel systems?	1	1	2	1
	(A) Execution time (B) Total parallel overhead (C) Speed up (D) Run time				
7.	The prefix sum operation can be implemented using the	1	1	2	2
	(A) All-to-all broadcast kernel (B) All-to-one broadcast kernel (C) One-to-all broadcast kernel (D) Scatter kernel				
8.	Simplifies applications of three tier architecture is_____	1	2	2	3
	(A) Maintenance (B) Initiation (C) Implementation (D) Deployment				

9. EFT = T^{EPT} + _____ time.   1 3 3 2
   (A) Session   (B) Down
   (C) Fall   (D) Current

10. Expand FIM   1 2 3 3
    (A) Field ideal management   (B) Federated idea management
    (C) Field identity management (D) Federated identity management

11. _____ window help us to find the total number of dispatched task.   1 1 3 2
    (A) Monitor   (B) Tasks
    (C) Dispatch   (D) Job

12. T^{EPT} + current time =   1 3 3 3
    (A) Estimated failure time   (B) Estimated finish time
    (C) Easy failure time   (D) Easy finish time

13. _____ is an application accelerator of computing systems.   1 2 4 2
    (A) FPGA   (B) FPAA
    (C) FGPA   (D) ASIC

14. Applications perform nearest neighbor computations is called _____   1 1 4 2
    (A) Stencils   (B) VLIN
    (C) Hardware architecture   (D) DSP

15. _____ transformation a dimension to a new size in order too   1 1 4 3
    reduce cache-set conflicts.
    (A) FISH   (B) SIMD
    (C) Array packing   (D) Loop fitting

16. _____ help us to generate automatic custom instruction processes.   1 1 4 3
    (A) VLIN   (B) FISH
    (C) ASIC   (D) ASP

17. _____ provides a uniform programming model that hides hardware   1 2 5 3
    design and scheduling.
    (A) SONAR   (B) SOLAR
    (C) SOLAC   (D) SONAC

18. _____ allows the hardware modulus to access system memory   1 2 5 3
    independently of the CPU.
    (A) SMID   (B) DAM
    (C) SIMD   (D) DMA

19. Expand KBMF   1 1 5 2
    (A) Kernelized Bayesian matrix (B) Kernel based matrix function
        factorization
    (C) Kernelized bay matrix function (D) Kernel bay multiples factor

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20. Support vector mechanism and regularized classification methods used for _____ prediction.

	1	1	5	2

    (A) SVM   (B) DTI
    (C) RLS   (D) QPCRS

PART – B (5 × 4 = 20 Marks)
Answer ANY FIVE Questions

	Marks	BL	CO	PO
21. Explain data topology.	4	1	1	1
22. What are all the key components of public-private grid partnership?	4	2	1	1
23. Define site number and submission time.	4	2	2	1
24. What is the use of the dispatch window?	4	2	3	2
25. Define static and stream.	4	3	4	3
26. Write an overview of GPU accelerators of neural networks.	4	3	5	3
27. Explain in detail about neighbourhood smoothing.	4	2	5	2

PART – C (5 × 12 = 60 Marks)
Answer ALL Questions

	Marks	BL	CO	PO
28. a. Explain in detail about the role of super computers in grids.	12	2	1	1

(OR)

	Marks	BL	CO	PO

b. Discuss the following
   (i)   Leverage of market power
   (ii) Sharing of operational cost
   (iii) Optimize system usage
	4
	4
	4
		2	1	1

29. a. Explain in detail about moldable job allocation in parallel computers.	12	3	2	1

(OR)

	Marks	BL	CO	PO
b. Analyze the flowchart of moladable job allocation in a heterogeneous grid and explain the same in detail.	12	3	2	1
30. a. With a neat sketch describe how data usage is controlled on the service provider side.	12	3	3	2

(OR)

	Marks	BL	CO	PO
b. Draw and explain the architecture of privacy management for the grid services.	12	2	3	3

31. a. Explain in detail about controllable dataflow execution model with three different scenarios.   12 3 4 3

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(OR)

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b. Discuss the following in detail   6 3 4 3
   (i)   Application specific micro architecture   6 3 4 3
   (ii) Stencil computation

32. a. Explain in detail about logistic matrix factorization.   12 2 5 2

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(OR)

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b. Explain in detail about NRLMF.   12 2 5 2

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