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society CBCS SCHEME

USN | | | | | | | | | | 15CS72

SeVenth Semester B.E. Degree Examination, June/July 2019
Advanced Computer Architectures

Time: 3 hrs. Max. Marks: 80

Note: ***Answer any FIVE full questions, choosing ONE full question from each module.***

Module-1

1 a. Explain the evolution of computer architecture. (08 **Marks**)
b. Explain with diagram the operational model of SIMD super computer. **(08 Marks)**

OR

2 a. Explain the Bernstein's conditions for parallelism. Detect the parallelism in the following code using Bernstein's conditions. (Assume no pipeline).
P_1 : C=DxE; $1^3$2:M=G+C; P3 : A=B+C; P4 : C=L+M; P5 : G±E. **(08 Marks)**
b. With a diagram, explain the operation of tagged token data flow computer. **(08 Marks)**

Module-2

3 a. Distinguish between typical RISC and CISC process architectures. **(08 Marks)**
b. With a diagrams, explain the models of a basic scalar computer system. **(08 Marks)**

OR

4 a. With a diagram, explain a typical superscalar RISC processor architecture consisting of an integer unit and a floating point unit. **(10 Marks)**
b. With a diagram, explain the hierarchical memory technology. **(06 Marks)**

Module-3

5 a. Explain with diagram, the backplane bus specification. **(08 Marks)**
b. With the diagrams, explain the central arbitration and distribution arbitration. **(08 Marks)**

OR

6 a. For the reservation table of a non-linear pipeline shown below :

	1	2	3	4	5	6
S_1	X					X
S2		X			X	
S3			X			
S4				X		
S5		X				X

i) What are the forbidden latencies? Write initial collision vector
ii) Draw the state transition diagram
iii) List all simple cycles and greedy cycles
iv) Determine MAL. **(10 Marks)**

b Explain prefetch buffer and internal data forwarding mechanisms used in instruction pipelining. **(06 Marks)**

Important Note

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Module-4

7 a. Explain crossbar networks and cross-point switch design in multiprocessor system. **(08 Marks)**

b. With necessary sketches, explain the cache-coherence problems **in data sharing** and in process migration. **(08 Marks)**

OR

8 a. With a diagram, explain the architecture of the connection machine CM-2. **(08 Marks)**

b. Explain the context—switching policies. **(08 Marks)**

Module-5

9 a. Explain the concurrent OOP and an actor model in object — oriented model. **(08 Marks)**

b. Explain the fairness policies and sole-access —protocols in the principles of synchronization. **(08 Marks)**

OR

10 a. What are the major hurdles of pipelining'? Illustrate the branch hazards in detail. **(08 Marks,**

b. Explain the dynamic scheduling of a pipeline using Tomasulo's algorithm. **(08 Marks)**

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