

PG CBCS
M.Sc. Semester-I Examination, 2021
COMPUTER SCIENCE
PAPER: COS 102

(ADVANCED COMPUTER ARCHITECTURE)

Full Marks: 40

Time: 2 Hours

Answer any FOUR questions from the following:

4X10=40

1. What is Computer Architecture? State the difference between Computer Architecture and computer Organization? Define the structure of SISD, SIMD, MISD, MIMD with proper diagram. 1+3+6
2. Describe about the Von-Neumann Model of Architecture. What is the bottleneck of Von-Neumann Model? State the difference between RISC and CISC. 2+3+5
3. Consider the following reservation table:

Stages	1	2	3	4	5	6	7
S1	X		X				X
S2				X		X	
S3		X			X		

- i) Find all forbidden and non-forbidden latencies.
 - ii) Find the collision-vector.
 - iii) Draw the transition diagram.
 - iv) List all simple and greedy cycles.
 - v) Calculate minimum average latency. 2+2+3+2+1
4. What is Pipeline hazards? Explain different types of Hazards in pipeline. A non-pipelined single cycle processor operating at 100 MHz is converted into a synchronous pipelined processor with five stages requiring 2.5 ns, 1.5 ns, 2 ns, 1.5 ns and 2.5 ns respectively. The delay of the latches is 0.5 sec. Find the speed up of the pipeline processor for a large no of processor. 1+4+5
 5. What is Multiprocessor Architecture? Describe about the difference between Loosely Coupled & Tightly Coupled Systems. State about the advantages and performance about IO systems. Define about Model of Consistency. 2+4+2+2
 6. What is Interconnection Network? State the Comparison and application of Shuffle Exchange, Omega, Cuba. Define the types of Interconnected Network. 2+4+4

(P.T.O.)

(2)

7. Short Notes:(Must attend (i) and any 2 from rest of the question): 4+3+3
- i) UMA model
 - ii) WAP
 - iii) DFA
 - iv) DFG
 - v) DSP processor
8. What is Multiprocessors Architecture? Define Vector processing & Vector processors. State the difference between Static and Dynamic DFA. What is Petri-nets? 2+3+3+2
9. State the difference between NUMA and UMA Model Architecture. What is Locality of reference? Explain the different types of locality of reference. 4+2+4
10. State the advantages of Pipeline. Describe about different types of Pipeline. What is Hardware Control Unit? State the difference between Hardwired Control unit and Microprogrammed Control Unit. 2+3+1+4
