

or April

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST-2 EXAMINATION- APRIL-2018
B.Tech (CSE/IT) 8th Semester

COURSE CODE: 10B1WCI834
COURSE NAME: Parallel Processing
COURSE CREDITS: 03

MAX. MARKS: 25

MAX. TIME: 1 HR 30 MINUTES

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

1. What is the cache coherence problem in multiprocessor systems? What are the three sources of cache coherence problem in multiprocessor systems? How can a cache coherence problem be solved using a Snoopy Bus protocol? [5 marks]
2. What are the three directory-based protocols to resolve the issue of cache coherence problem in large multiprocessor systems? Explain any two protocols with illustrative diagrams. [5 marks]
3. What the difference between deterministic and adaptive routing schemes in multicomputer systems? Find the route using E-cube routing algorithm on a four-dimensional hypercube. The details of the information, i.e., the source node, the destination node, and the route are given as below:
Source: $s = 0110$
Destination: $d = 1101$
Route: $0110 \rightarrow 0111 \rightarrow 0101 \rightarrow 1101$ [5 marks]
4. Use a greedy multicast tree algorithm to multicast the packet through dimension(s) on a four-dimensional hypercube. The packet has to be multicast from node 0101 to seven destination nodes 1100, 0111, 1010, 1110, 1011, 1000, and 0010. [5 marks]
5. Explain the following terms associated with multicomputer networks and message-passing mechanisms:
 - i. Message, packets, and flits.
 - ii. Store-and-forward routing at packet level and wormhole routing at flit level.
 - iii. Buffer deadlock versus channel deadlock. [1+2+2 = 5 marks]