DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING, UNIVERSITY OF CALCUTTA

CLASS TEST FOR M. SC. SEMESTER-II, 2024

Full Marks: 20 Time: 1 hour

1. Answer any five of the following: 2x5=10

a) In a distributed system, what is the significance of finding two or more events as concurrent?
b) Define the global state of a system.
c) Explain the significance of name transparency for a distributed system.
d) Compare syntactic versus semantic distribution transparency.
e) Following the Ricart-Agrawala algorithm, deduce the number of control messages exchanged between N participating nodes for M successive access to the respective critical sections.
f) Why, in a distributed system, periodic synchronization of clocks in the participating sites is not considered good?

2. Answer any two of the following: 5x2=10

a) "It is required to record the state of the channel through which the first marker is delivered to any node as empty for the sake of consistent state record" - do you agree with this comment in the context of the Chandy-Lamport's state recording algorithm? Justify your opinion within 150 words.
b) Is it possible to follow a Master clock in a Master node as the system's clock for an entire distributed system? Justify your opinion within 150 words.
c) Identify the node set that can be reached from node A in the figure attached, in maximum 2-hops. Also, identify the node(s) for the attached figure that can act as possible initiator node(s) for diffusion computation algorithms. Also, for each of the possible initiator nodes(s), identify the order in which the nodes will be traversed till all nodes in the network are reached.