1. What algorithm do you use for leader election if all nodes are identical?

3. What are the time and message complexities of the variable speeds and time slice algorithm for leader election in synchronous rings? When do you use variable speeds algorithms instead of the time slice algorithm?

4. Why is the time complexity of the Bellman-Ford algorithm for shortest paths in synchronous networks not O(diam)?
5. Develop the most efficient distributed algorithm for shortest paths in ring networks. What are the time and message complexities?

6. Consider LubyMIS algorithm. Instead of val of each node being a random number in [1..n^4], let val of a node be its unique id in all phases/rounds. Derive the time complexity of this modified LubyMIS algorithm.

7. In asynchronous networks where |E| = O(n^{1.5}) and diam = O(n), what is the best value of m to use in hybridBFS algorithm to minimize the message complexity?
8. Among n nodes, there are k “special nodes” (k<n) and each node knows whether it is a “special node” or not. For this system, develop a message-efficient asynchronous distributed algorithm for leader election.

9. Describe how a component finds its MWOE in (asynchronous GHS)
10. Can the spanning tree constructed by SynchGHS be different from the spanning tree created by (asynchronous) GHS for the same graph? Justify your answer.

11. Prove that each component of level $k$ has at least $2^k$ nodes in GHS algorithm (asynchronous)