

## Mid-Term Examination

**Course Name:** Blockchain Technology: A S/W Engg. Perspective (Code: CS578)

**Total Marks:** 15

**Submission Link:** <https://forms.gle/KFZxgAeZ7AJCPuVS9>

**Deadline:** 10:00 a.m., 25<sup>th</sup> Feb 2022

Make appropriate assumption whenever necessary.

1. What is formal method? Identity two issues in blockchain where formal methods play crucial roles (illustrate clearly with suitable example in each of these two cases) **[1+4=5 marks]**
2. Explain how the quorum size of  $(2f + 1)$  guarantees safety and liveness in PBFT consensus algorithm, where  $f$  denotes the number of Byzantine nodes. **[2.5 marks]**
3. Consider a distributed system consisting of six nodes, which is using Raft consensus algorithm. The log status (below only log index and leader-terms are mentioned for simplicity) of the nodes are shown below. Provide your justification whether this log configuration for EACH of the followers is valid or not (justification is mandatory). **[7.5 marks]**

