

National Institute of Technology, Silchar
End-Semester (UG) Examinations, May 2022

Subject Code: CS-382
Semester: 6th
Duration: Two Hours

Subject: Introduction to Blockchain
Department: Computer Science and Engineering
Total Marks: 50

Answer FIVE Questions.

Q1 to Q4 are compulsory. Choose any one from Q5 and Q6.

Q. No.	Question	Marks	CO
1. (a)✓	What are the technical and organizational capabilities that an organization should examine before starting the implementation of Blockchain?	3	CO-1
(b)✓	Write the benefits of "Dapp" as compared to "traditional App".	3	CO-1
(c)	Briefly explain Swarm's layered design of a Blockchain stack.	4	CO-1
2. (a)✓	Briefly explain about data structure of a block in a Blockchain with a suitable diagram.	4	CO-1
(b)	Suppose "1", "5", "7" and "13" are the nodes in a network. Explain how messages can be route among the said nodes in a network using "Kademlia Routing".	6	CO-2
3. (a)✓	What are the main steps involved in designing and implementing a Blockchain in Healthcare domain?	2	CO-2
(b)✓	Design a Smart Contract for "Solar Charging Stations". Write the corresponding lines of code for implementation of the same in any high level language.	8	CO-3
4. (a)✓	Explain challenges of application of Blockchain in Financial Sector.	4	CO-3
(b)✓	Explain Consistency, Availability and Partition Tolerance in Blockchain.	6	CO-3
5✓	Explain the working principles of SHA-256 hash function with a suitable example.	10	CO-2
6.	Is it possible to create "recreatable hashes"? Justify your answer with a suitable example by using any one algorithm that belongs to Secure Hash Algorithm (SHA) family.	10	CO-2

Course Outcomes (CO):

After completion of this course, the students are expected to

CO-1: An basic idea about Blockchain technology

CO-2: Applications and implementation strategies of Blockchain

CO-3: Understandings of current trends of Blockchain, and ability to imagine its use cases, open research challenges and future directions.