

K. J. Somaiya Institute of Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)

Nov – Dec 2025

(B. Tech) Program: Blockchain Honor Scheme I **8 II B**

Regular Examination: LY Semester: VII

Course Code: HBCC701 and Course Name: Block chain Development

Duration: 10.30am to 1.00pm

Max. Marks: 60

Date of Exam: Nov 21, 2025

Instructions:

- (1) All questions are compulsory.
- (2) Draw neat diagrams wherever applicable.
- (3) Assume suitable data, if necessary.

Q. No.	Question	Max. Marks	CO	BT level
Q 1	Solve any two questions out of three: (05 marks each)	10		
a)	Explain the role of Swarm and Whisper in the Ethereum ecosystem?		CO1	U
b)	Explain Hyperledger Sawtooth. Highlight one key architectural difference between Sawtooth and Fabric.		CO5	U
c)	Write a short note on Blockchain integration with Artificial Intelligence (AI). How does blockchain help in improving AI model trustworthiness?		CO6	U
Q 2	Solve any two questions out of three: (05 marks each)	10		
a)	What is IPFS? Describe how decentralized file storage improves the performance and security of blockchain applications.		CO2	U
b)	Explain the Mapper (Mapping) function in Solidity? Demonstrate its use with a simple key-value storage example.		CO3	U
c)	Explain the difference between Ethereum Mainnet and Private Ethereum Networks with examples.		CO4	U
Q.3	Solve any two questions out of three. (10 marks each)	20		
a)	Write a detailed note on security pitfalls in smart contract development. Explain how languages like Vyper and Simplicity reduce risks through design constraints.		CO2	U
b)	Discuss the structure and components of Hyperledger Fabric Network Configuration.		CO5	U
c)	Explain in End-to-End Healthcare application System architecture (blockchain layer, API layer, cloud/enterprise systems)		CO6	U

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	• Data flow • Smart contract logic • Security considerations • Benefits and limitations			
Q.4	Solve any two questions out of three. (10 marks each)	20		
a)	Discuss the complete transaction lifecycle in Ethereum using an example of a smart contract deployment		CO5	U
b)	Describe digital signatures (ECDSA) and explain how Ethereum uses them for transaction authentication.		CO3	U
c)	Compare and contrast Geth and Ganache as deployment environments.		CO4	U
