

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

Nov – Dec 2025

(B. Tech Program: Information Technology Scheme: III

Regular Examination: TY (Honours) Semester: V

Course Code: HBCC501 and Course Name: Bit coin and Crypto currency

Date of Exam: 05/12/2025

Duration: 02.5 Hours

Max. Marks: 60

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)	Define a Merkle Tree? Explain its purpose in Bitcoin.		CO1	U
b)	Describe the Base58 Encoding with example.		CO4	U
c)	Explain Simplified Payment Verification (SPV) nodes with example.		CO5	Ap
Q 2	Solve any two questions out of three: (05 marks each)	10		
a)	Explain the concept of decentralized consensus in the Bitcoin network.		CO2	U
b)	Explain the complete process of sending and receiving Bitcoin.		CO3	U
c)	Explain cloud and IoT applications where blockchain technology is used.		CO6	U
Q.3	Solve any two questions out of three. (10 marks each)	20		
a)	Explain the full structure of a Bitcoin block in detail. Describe the components of the block header and their roles in block validation.		CO1	U
b)	Explain the Byzantine General's Problem. Discuss how Bitcoin overcomes this problem through proof-of-work .		CO2	U
c)	Explain the different types of Nodes in blockchain		CO4	U
Q.4	Solve any two questions out of three. (10 marks each)	20		
a)	Discuss in detail the Bitcoin peer-to-peer network architecture.		CO5	U
b)	Explain the Nondeterministic (Random) wallets, and Deterministic (Seeded) wallets with example.		CO4	U
c)	Explain the role of blockchain in healthcare.		CO6	U
