(3 Hours) (Total Marks: 80)

N.B.: 1. Question No. 1 is compulsory.
2. Answer any three out of the remaining questions.
3. Assume suitable data if necessary.
4. Figures to the right indicate full marks.

Q1. Attempt the following (any 4): (20)

a. Explain Gas and Ethers in detail.

b. What is the fundamental difference between a hot wallet and a cold wallet in the context of blockchain and cryptocurrency storage?

c. Explain the concept of an orphaned block.

d. Describe how solidity supports multiple inheritance with an example.

e. Compare Bitcoin and Ethereum.

Q2. Attempt the following:

a. Differentiate between public, private and consortium blockchain. (10)

b. Differentiate between PoW, PoS, PoB & PoET. (10)

Q3. Attempt the following:

a. Explain Merkle Tree with the help of an example. (10)

b. What is mining difficulty and how is it calculated in a proof-of-work? Explain with an example. (10)

Q4. Attempt the following:

a. Write and elaborate a code in solidity to explain visibility and activity qualifiers. (10)

b. Explain view function and pure function in solidity with suitable examples. (10)

Q5. Attempt the following:

a. Explain state machine replication with suitable example. (10)

b. Explain RAFT consensus algorithm with a suitable example. (10)

Q6. Write short notes on (any 2): (20)

a. Role of smart contracts in decentralized finance (DeFi)

b. Ripple

c. Ethereum Virtual Machine (EVM)

d. Mining pool and its methods

****