0512E892   Candidate's Seat No :_____

IM.Sc in CSF Sem.-7 Examination
ICSF-401
Web 3.0 Security

Time : 2-30 Hours]   December-2024   [Max. Marks : 70

Question 1 Answer the following questions:

i. Explain the evolution from Web 1.0 to Web 3.0, highlighting key changes.   7Marks

ii. Describe the architecture of a blockchain with a focus on blocks, chains, and transactions.   7Marks

OR

i. Explain the working of the Proof of Work (PoW) consensus mechanism with an example.   7Marks

ii. Discuss the importance of nodes in blockchain networks and their types.   7Marks

Question 2 Answer the following questions:

i. Discuss the importance of private keys and digital signatures in ensuring secure transactions.   7Marks

ii. Explain the working of a smart contract with an example.   7Marks

OR

i. Describe the concept of overflow/underflow in smart contracts and its prevention methods.   7Marks

ii. What are the key security challenges in smart contracts? Provide examples.   7Marks

Question 3 Answer the following questions:

i. Compare traditional applications and decentralized applications (dApps).   7Marks

ii. Explain the security challenges associated with P2P networks.   7Marks

OR

i. Describe the prevention and mitigation strategies for DDoS attacks.   7Marks

ii. Explain the role of smart contracts in dApp functionality and security.   7Marks

Questions 4 Answer the following questions:

i. Explain the concept and benefits of Decentralized Identity (DID).   7Marks

ii. What is RBAC, and how does it enhance security in Web 3.0 systems?   7Marks

OR

i. Discuss techniques for ensuring data privacy in decentralized systems.   7Marks

ii. Explain how zero-knowledge proofs contribute to the security and privacy of blockchain systems.   7Marks

Questions 5: Attempt any Seven out of Twelve.   14Marks

1. Define zero-knowledge proof in one sentence.

2. Name a regulation related to data protection.

3. What is the purpose of GDPR?

(P.T.O)

4. What is a security challenge faced by P2P networks?

5. Name one prevention strategy for DDoS attacks.

6. Give an example of a platform that supports smart contracts.

7. List two common vulnerabilities in smart contracts.

8. What is reentrancy in the context of smart contracts?

9. What is an overflow vulnerability?

10 List three types of blockchains.

11 What role do nodes play in blockchain architecture?

12 What is a consensus mechanism?

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