

TE | sem VI | e-scheme R-19 | IOT

QP-10065785

16/12/24

Duration: 3 Hours

[Max Marks: 80]

- N.B. : (1) Question No 1 is Compulsory.
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Assume suitable data, if required, and state it clearly.

- 1 Attempt any **FOUR** [20]
- a Explain forensics duplicates as admissible evidence.
 - b Explain penetration testing and how social engineering can be used for pentesting.
 - c What are the challenges in evidence handling?
 - d Define footprinting and discuss different footprinting tools.
 - e Define ethical hacking and explain types of hackers and phases of hacking.
 - f Briefly explain what an expert witness and scientific witness is?
- 2 a Explain the term in detail (**any five**): [10]
Forensic duplicate, Qualified Forensic Duplicate, Mirror image, Chain of custody, Evidence bags, Restored image, Bit-stream image, Evidence custody form, Repeatable findings and forensic workstations
- b Define data carving. List and discuss different tools for forensic analysis. [10]
- 3 a Compare Google Hacking (GHDB) and doxing in information gathering. [10]
- b Explain forensics analysis of the data acquired from any one of the operating system. [10]
- 4 a Explain guidelines for incident report writing with a suitable example of an incidence. [10]
- b Explain the chain of custody and its significance. [10]
- 5 a Explain the goal of incident response. Mention incidence response methodology with suitable diagram. [10]
- b Design a strategy to address cross-jurisdictional challenges in forensic investigations. [10]
- 6 a Point out the features of Forensic Duplication and Investigation & also outline the problems and challenges forensic examiners face when preparing and processing investigations, including the ideas and questions they must consider. [10]
- b Write short note on: [10]
- 1. Enumeration techniques and tools
 - 2. Digital Forensics



QP-10070863

TE (sem VI) C-Scheme R 19 / IOT

10/12/24

Duration: 3 hours

[Max Marks: 80]

- N.B.: (1) Question No 1 is Compulsory.
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Assume suitable data, if required, and state it clearly.

- 1 Attempt any FOUR [20]
- a Explain the structure of a block in blockchain with an example.
- b Explain the role of the Certificate Authority in Hyperledger Fabric.
- c What are ERC721 tokens, and how do they differ from ERC20?
- d Define Proof of Work (PoW) and explain its role in Bitcoin.
- e What are the benefits of using blockchain in supply chain management?
- f What is the Ethereum Virtual Machine and what functions does it perform?
- 2 a Discuss the types of nodes in the Bitcoin network and their roles. [10]
- b Discuss the Impact of Blockchain on Data Security in IoT Devices. [10]
- 3 a Describe the setup for smart contract development tools. [10]
- b Compare consensus mechanisms: Solo, Kafka, and RAFT. [10]
- 4 a Explain how decentralized finance differs from traditional finance. [10]
- b Compare the Bitcoin network's Full Nodes with Simplified Payment Verification nodes. [10]
- 5 a Explain the significance of a Hyperledger fabric. [10]
- b Discuss the significance of ICOs and STOs in cryptocurrency fundraising. [10]
- 6 a Describe Merkle tree's function in blockchains [10]
- b Explain smart contracts and their significance in Ethereum, with an example. [10]



QP-10067283

TE | sem VI | C-scheme R-19 | IoT

Time: 3 Hours

Total Marks: 80

- Note: 1. Question 1 is compulsory
2. Answer any three out of remaining questions
3. Assume suitable data where required

5/12/24

- Q1 Solve any 4
- a) A short note on DICE 5
 - b) Explain Legacy Device Support concept. 5
 - c) What is the significance of range and frequency bands in IoT communications? 5
 - d) Describe PRL Metrics 5
 - e) Briefly explain Fog computing 5
- Q2
- a) Explain the importance of the physical layer and MAC (Medium Access Control) layer in IoT access technologies 10
 - b) Briefly define what sensors and actuators are, and explain how they function within an IoT ecosystem 10
- Q3
- a) What is the IoT World Forum (IoTWF) Standardized Architecture? 10
 - b) Explain the core IoT functional stack (Layer 1-3) and its importance. 10
- Q4
- a) Discuss the differences between IEEE 802.15.4, LoRaWAN, and NB-IoT in terms of topology, range, and security. 10
 - b) Explain the concepts of objective function rank, RPL headers, and metrics in the context of RPL. 10
- Q5
- a) Explain the formal risk analysis structures OCTAVE and FAIR. 10
 - b) Explain AMQP protocol 10
- Q6
- a) Explore the Purdue Model for Control Hierarchy and its implications for security practices in OT 10
 - b) Explain the significance of insecure operational protocols like Modbus, DNP3, and ICCP in OT security vulnerabilities. 10



(3 Hours)

(Total Marks: 80)

NB:

1. Question No. 1 is compulsory and solve any THREE questions from remaining questions
2. Assume suitable data if necessary
3. Draw clean and neat diagrams

Q1 Attempt any four

- a. Explain Express.js Cookies management. 05
- b. Explain Multi level inheritance in TypeScript with example 05
- c. What is expressions in AngularJS 05
- d. Discuss default database in MongoDB: local, admin, and config 05
- e. Explain features of Nodejs 05

- Q2
- a. Explain Web 1.0, Web 2.0, Web 3.0 10
 - b. Illustrate Read Stream and Write Stream in Nodejs 10

- Q3
- a. Explain Routing using ng-Route, ng-Repeat, ng-style, ng-view. With suitable example 10
 - b. Explain REST API and evaluating API patterns. 10

- Q4
- a. Explain Callback in Nodejs with suitable example. 10
 - b. Explain functions in TypeScript with example 10

- Q5
- a. Discuss Express.js Middleware with example. 10
 - b. Differentiate RDBMS v/s MongoDB 10

- Q6
- a. Explain Express router with example. 10
 - b. Short note on Angular JS filters with example. 10



TE sem VIth R-19 C Scheme (SECIOT)

VI/IOT/Web X.0

(3 Hours.)

Marks = 80

NB:

1. Question No. 1 is compulsory and solve any THREE questions from remaining questions
2. Assume suitable data if necessary
3. Draw clean and neat diagrams

- Q1. Attempt any 4
- | | | |
|-----|---|----|
| a. | Explain Multilevel Inheritance in Typescript with suitable example | 5 |
| b. | Illustrate features of ExpressJS | 5 |
| c. | Explain Characteristics of RDF | 5 |
| d. | Explain AngularJS expressions with an example | 5 |
| e. | Explain Callback function in Nodejs with example | 5 |
| Q2. | a. Explain Web Module in Nodejs. | 10 |
| | b. Explain MongoDB Data Types along with syntax. | 10 |
| Q3. | a. Compare and contrast Web 1.0, Web 2.0 and Web 3.0 | 10 |
| | b. Explain data binding in AngularJS with suitable example | 10 |
| Q4 | a. Explain Express.js Cookies management with example | 10 |
| | b. Differentiate Var v/s Let. and Explain types in typescript with suitable examples. | 10 |
| Q5 | a. Explain MongoDB CRUD Operations with an example. | 10 |
| | b. Explain Streams in Nodejs. | 10 |
| Q6 | a. Explain Express Router with example. | 10 |
| | b. Explain AngularJS \$http service in detail with its get() and post() methods. | 10 |