No. of Printed Pages : 4

Sl. No.

B3.E9-R5 BLOCKCHAIN TECHNOLOGY

DURATION : 03 Hours **MAXIMUM MARKS : 100**

Roll No. : | | | | | | |

Answer Sheet No. : | | | | | | |

Name of Candidate : _____ **; Signature of Candidate :** _____

INSTRUCTIONS FOR CANDIDATES :

- Carefully read the instructions given on Question Paper, Answer Sheet.
- Question Paper is in English language. Candidate has to answer in English Language only.
- **Question paper contains Seven questions. The Question No. 1 is compulsory. Attempt any FOUR Questions from Question No. 2 to 7.**
- **Parts of the same question should be answered together and in the same sequence.**
- **Questions are** to be answered in the **ANSWER SHEET** only, supplied with the Question Paper.
- **Candidate cannot leave the examination hall/ room without signing on the attendance sheet and handing over his/her Answer Sheet to the Invigilator. Failing in doing so, will amount to disqualification of Candidate in this Module/Paper.**
- After receiving the instruction to open the booklet and before answering the questions, the candidate should ensure that the Question Booklet is complete in all respects.

DO NOT OPEN THE QUESTION BOOKLET UNTIL YOU ARE TOLD TO DO SO.

1. (a) Describe the basic processes carried out in Public Key Cryptography.

(b) What are the limitations of blockchain technology ?

(c) What are the objectives of Blockchain Consensus Mechanism ?

(d) Explain in detail the sub-key generation and round function of DES algorithm in detail.

(e) Explain bitcoin and it's working. State how the values of bitcoin is decided.

(f) Define threat and attack. What is the difference between both ? List some examples of attacks which have arisen in real world cases.

(g) State and explain the constituents of block header.

(7x4)

2. (a) What do you mean by AES ? Diagrammatically illustrate the structure of AES and describe the steps in AES encryption process with example.

(b) What is monoalphabetic cipher ? Examine how it differs from Caesar cipher.

(c) Explain Byzantine Fault Tolerance (BFT). How does it address the issue of malicious or faulty nodes ?

(9+5+4)

3. (a) Discuss in detail various types of consensus protocol of permissioned blockchain networks.

(b) What are the projects under the Hyperledger ? Explain in detail about Hyperledger Fabric and Hyperledger Sawtooth ?

(c) Discuss the advantages and disadvantages of permissioned blockchain.

(9+5+4)

4. (a) Consider an application like election system, how smart contracts can be done for it ? Show and explain with use case diagram.

(b) Show the disadvantages of Crypto currency over digital currency.

(c) Explain Asymmetric Cryptography in Blockchain.

(9+5+4)

5. (a) Differentiate Public Blockchain and Private Blockchain with an example.

(b) Write notes on :

(i) Precompiled Contracts.

(ii) Accounts and its types in Ethereum.

(9+9)

6. (a) List the Sensor Network Programming Challenges and Node-Level Software Platforms.

(b) Why do we need Ganache for Ethereum development ?

(c) What are DApps ? What is the role of flowcharts and diagrams in designing a DApp project ?

(9+5+4)

7. (a) Explain Ethereum Block header in detail and different type's wallets in Ethereum.

(b) Explain CAP theorem and illustrate the methods of decentralization in detail.

(9+9)

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SPACE FOR ROUGH WORK