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B.Tech. V-Sem. (Main&Back) Examination, November/December - 2025
Artificial Intelligence and Data Science
5AID5-11 Fundamental of Block Chain (Elective-I)
AID,CAI,CDS

Time : 3 Hours **Maximum Marks : 70**

Instructions to Candidates:

Attempt all Ten questions from Part A, Five questions out of seven questions from Part B and Three questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination.

(Mentioned in form No. 205).

PART - A

(Answer should be given up to 25 words only)

All questions are compulsory. **(10×2=20)**

1. Define the double-spend problem in blockchain.
2. What is public key cryptography?
3. State two advantages of using blockchain technology.
4. What is the purpose of hashing in blockchain?
5. Define distributed consensus.
6. Write any two features of the bitcoin blockchain.
7. What are smart contracts in ethereum?
8. Differentiate between public and private blockchain.
9. What is proof of work?
10. Give one use case of block chain in supply chain management.

PART - B

(Analytical / Problem Solving Questions)

Attempt any Five questions. **(5×4=20)**

1. Explain the Byzantine generals problem with an example.
2. Describe the structure of a blockchain block with a diagram.

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3. Differentiate between block chain 1.0, 2.0 and 3.0 with examples.
4. Explain how hashing ensures data integrity in blockchain systems.
5. What are the main operations performed in the ethereum blockchain?
6. Discuss Federated byzantine consensus in blockchain systems.
7. What is the role of incentive models in blockchain networks?

PART - C

(Descriptive / Analytical / Problem Solving / Design Questions)

Attempt any Three questions. **(3×10=30)**

1. Explain in detail the bitcoin blockchain, including its structure, operations, features and consensus model.
2. Illustrate the Ethereum blockchain architecture and explain the working of smart contracts with example.
3. What are consensus algorithms? Explain proof of state and proof of work in detail with advantages and limitations.
4. Discuss different types of blockchain networks, public, private, semi-private and sidechain with appropriate example.
5. Describe blockchain use case in supply chain management, highlighting its benefits and implementation challenges.

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