

Time: 3 hour

Total Marks: 80

- N.B.**
- 1. Question No. 1 is compulsory**
 - 2. Attempt any three questions from remaining five questions**
 - 3. Assume suitable data if necessary and justify the assumptions**
 - 4. Figures to the right indicate full marks**

- Q1 Answer the Following.** 20
- A Compare derivational and inflectional morphology with suitable example 05
- B Discuss various challenges in processing natural language. 05
- C Discuss Information Retrieval vs Information Extraction in detail 05
- D What do you mean by word sense disambiguation (WSD)? Explain machine learning based (Naive based) approach for WSD. 05
- Q2**
- A Write a note on Syntactic and Semantic Constraints on Coreference. 10
- B Explain Porter's Stemming algorithm with example. 10
- Q3**
- A Explain with suitable example following relationships between word meanings: Homonymy, Polysemy, Synonymy, Antonymy, Hypernymy, Hyponymy, Meronymy. 10
- B What is Natural language processing (NLP)? Discuss various stages involved in NLP process with suitable example. 10

[TURN OVER]

- Q4 A Explain N-gram model with example. 10
B Explain in detail Stochastic (HMM) tagging. 10
- Q5 A Consider following Training data: 10
<s> I am Sam </s>
<s> Sam I am </s>
<s> Sam I like </s>
<s> Sam I do like </s>
<s> do I like Sam </s>
- Assume that we use a bigram language model based on the above training data.
What is the most probable next word predicted by the model for the following word sequences?
- (1) <s> Sam ...
(2) <s> Sam I do ...
(3) <s> Sam I am Sam ...
(4) <s> do I like ...
- B What is parsing? Explain types of parsing in NLP. 10
- Q6 Write Short Notes.(5 marks each) 20
a) Named Entity Recognition
b) Wordnet
c) Reference Resolution problem
d) Machine Translation
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(3 Hours)

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- N.B.:**
1. Question No. 1 is compulsory.
 2. Answer any three out of the remaining questions.
 3. Assume suitable data if necessary.
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Q1. Attempt the following (any 4):

(20)

- a. Define blockchain. Compare different types of blockchain.
- b. State and explain various mining pool methods.
- c. What is a Bitcoin script? Explain pay-to-public-key-hash (P2PKH) scripts with a suitable example.
- d. How is swarm different from whisper?
- e. Write a program in solidity to check whether an entered number is a palindrome.

Q2. Attempt the following:

- a. With a suitable diagram, explain the structure of a block header with a list of transactions. (10)
- b. Compare Bitcoin and Ethereum. How to calculate mining difficulty in Bitcoin? (10)

Q3. Attempt the following:

- a. Describe the architecture of Ethereum. (10)
- b. Explain fixed and dynamic arrays in solidity with suitable examples. (10)

Q4. Attempt the following:

- a. Elaborate on RAFT consensus mechanism. (10)
- b. Write and elaborate a code in solidity to explain visibility and activity qualifiers. (10)

Q5. Attempt the following:

- a. Distinguish between altcoins, utility tokens and security tokens. (10)
- b. Describe Byzantine fault tolerant (BFT) algorithm. (10)

Q6. Write short notes on (any 2):

(20)

- a. ERC20 and ERC721
- b. UTXO model of Bitcoin
- c. Corda
- d. Blockchain in supply chain management

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- 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 List the various components of CBIS. [5]
 - b What are the features of Executive Support System? [5]
 - c Define Information security with an example. [5]
 - d Are Blogs and Wikis different? Justify with application of each. [5]
 - e How is E-commerce supported by MIS? Give one case to describe same. [5]
- 2 a Highlight the Economic impacts of IS. Give example. [10]
- b What do you mean by CAAS, SAAS, IASS ? Give the application of each of these. [10]
- 3 a Contrast to bring out the advantages and disadvantages of Complete environment in an organization. [10]
- b Discuss how privacy issue can impact transborder data flows? [10]
- 4 a What are types IS? Explain with example. [10]
- b Identify advantages and drawbacks of businesses implementation which uses an enterprise resource planning system. [10]
- 5 a Briefly describe the risks of social computing to business giving suitable examples. [10]
- b Is security an ethical responsibility? Justify with a case study. [10]
- 6 a Analyze the key benefits of cloud computing [10]
- b How the quality of data is ensured in an organization? [10]

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N.B.: 1) Question No.1 is compulsory.

2) Attempt any THREE questions out of remaining FIVE questions.

3) Figures to the right indicates full marks.

4) Assume suitable data if necessary.

- Q1 Attempt Any 4 20**
- a Explain about digital evidence.
 - b Explain different password cracking techniques.
 - c What are different Security Risks for Organizations?
 - d What is Cybercrime? Who are Cybercriminal? Explain.
 - e Explain about Credit card frauds in Mobile and Wireless Computing era.
- Q.2**
- a If a hacker creates a website similar to university website to cheat student. Identify attack and explain different types it. How to prevent from such attack. **10**
 - b Discuss steps involved in planning of cyberattacks by criminal. **10**
- Q.3**
- a Explain different types of Cybercrimes and how security will provide? **10**
 - b Explain why do we need cyber laws? Discuss about the challenges to Indian cyber laws **10**
- Q.4**
- a Explain Steps for SQL Injection attack. How to prevent SQL Injection attacks? **10**
If an attacker creates heavy traffic on the college website so that it becomes **10**
 - b inaccessible to the legitimate user. Which is this attack. Explain in details with it's types.
- Q.5**
- a What are illegal activities observed in Cyber Cafes? What are safety and security measures while using the computer in Cyber Café? **10**
 - b What are basic security precautions to be taken to safeguard Laptops and Wireless devices? Explain? **10**
- Q.6 Write short notes on any FOUR 20**
- a Salami attack
 - b HIPAA
 - c Mobile/Cell Phone attacks
 - d Cyberstalking and harassment
 - e SOX
 - f Buffer overflow attack

Duration: 3hrs

[Max Marks:80]

- (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) What are Feed Forward Neural Network?
 - b) Explain Gradient Descent in Deep Learning.
 - c) Explain the dropout method and it's advantages.
 - d) What are Undercomplete Autoencoders?
 - e) Explain Pooling operation in CNN.
- 2 a) What are the Three Classes of Deep Learning, explain each? [10]
- b) Explain the architecture of CNN with the help of a diagram. [10]
- 3 a) What are the different types of Gradient Descent methods, explain any three of them. [10]
- b) Explain main components of an Autoencoder and it's architecture. [10]
- 4 a) Explain LSTM model, how it overcomes the limitation of RNN. [10]
- b) What are the issues faced by Vanilla GAN models? [10]
- 5 a) What are L1 and L2 regularization methods? [10]
- b) Explain any three types of Autoencoders. [10]
- 6 a) What is the significance of Activation Functions in Neural Networks, explain different types Activation functions used in NN. [10]
- b) What are Generative Adversarial Networks, comment on it's applications. [10]

(3 Hours)

(Total Marks: 80)

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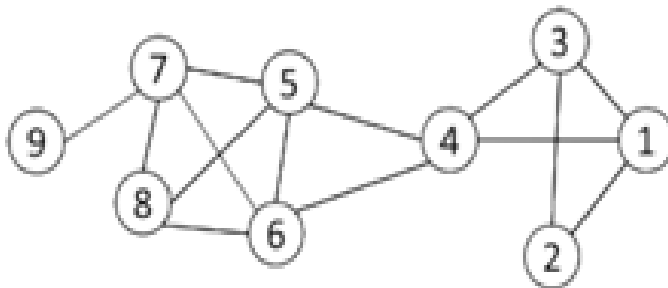
- Q1. Attempt the following (any 4):** (20)
- a. How does a blockchain transaction differ from a traditional transaction **05**
 - b. Explain Byzantine Generals Problem. **05**
 - c. Explain various steps to develop an Ethereum smart contract. **05**
 - d. Explain how to transfer Ethers using Metamask Wallet **05**
 - e. Explain the different function visibility and qualifiers **05**
- Q2. Attempt the following:**
- a. Explain the working of a Smart Contract with a neat diagram? **10**
 - b. Differentiate between public, private and consortium blockchain. **10**
- Q3. Attempt the following:**
- a. What are Merkle trees ? Explain the structure of a Merkle tree. What are the advantages of the Merkle tree? How does the Merkle tree ensure security in blockchain? **10**
 - b. What is a token? Explain different types of tokens. Explain utility tokens and security tokens in detail. **10**
- Q4. Attempt the following:**
- a. Explain Blockchain transaction life cycle. Explain transactions in blockchain. What is a mempool? How miners pick transactions from the mempool. **10**
 - b. Explain the working of Proof-of-Burn (PoB), Proof-of-Stake (Pos), Proof-of-Elapsed Time (POET) algorithms. Enlist their advantages and Disadvantages. **10**
- Q5. Attempt the following:**
- a. Explain in short string data type, types of arrays, and Struct data type in Solidity. Explain each with an example. **10**
 - b. Explain working of Hyperledger fabric. How to create a Hyperledger network. **10**
- Q6. Write short notes on (any 2):**
- a. Compare Bitcoin and Ethereum. **10**
 - b. Explain the concept of patient-controlled health data access through blockchain. **10**
 - c. How can blockchain improve the claims processing and verification process in the insurance industry? **10**
 - d. Explain PAXOS and RAFT consensus algorithms. **10**
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Time: 03 Hours

Marks: 80

- Note: 1. Question 1 is compulsory
2. Answer any three out of the remaining five questions.
3. Assume any suitable data wherever required and justify the same.

- Q1 Write short notes on: [20]
a) Big Data and its characteristics
b) Distance measures for Big Data
c) The Map and Reduce Tasks
d) Bloom filter for stream data mining
- Q2 a) Explain HDFS architecture. [10]
b) Explain Column family store and Graph Store NoSQL architectural pattern with example. [10]
- Q3 a) Write a Map reduce pseudo code to multiply two matrices. Illustrate with an example showing all the steps. [10]
b) Explain Issues in Data stream query processing [10]
- Q4 a) List the main components of Map reduce execution pipeline. [10]
b) Explain DGIM algorithm. [10]
- Q5 a) Explain Collaborative filtering system. How is it different from content based system . [10]
b) What is clique percolation method Write an algorithm on (CPM). [10]
Also show how the CPM finds clique for the following graph. Explain with steps.



- Q6 a) Explain PageRank algorithm. [10]
b) Explain CURE algorithm. [10]
