

Hall Ticket No: 

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Question Paper Code: 22MCAP106

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**  
(UGC-AUTONOMOUS)

**MCA I Year II Semester (R22) Regular & Supplementary End Semester Examinations, September - 2024**  
**FULL STACK WEB DEVELOPMENT**

**Time: 3Hrs**

**Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.  
**In Q.No 1 to 5 answer either A or B only**

| Q.No      | Question   | Marks    | CO | BL |
|-----------|--|----------|----|----|
| Q.1(A)    | i) Explain the Structure of HTML Program with neat diagram.<br>ii) Define List. Explain the different types of List with example program.            | 6M<br>6M | 1  | 4  |
| <b>OR</b> |  |          |    |    |
| Q.1(B)    | i) What is Form tag? What are the attributes that can be used with Form tag?<br>ii) Write HTML code with CSS to create table for your academic Marks | 6M<br>6M | 1  | 3  |
| Q.2(A)    | Define Function. Explain the implementation of JavaScript function with an example program.  | 12M      | 2  | 2  |
| <b>OR</b> |  |          |    |    |
| Q.2(B)    | Enumerate in detail the concept of Arrays and Boolean in Java script with example.   | 12M      | 2  | 4  |
| Q.3(A)    | Describe the Directives and Controllers in Angular JS.   | 12M      | 3  | 2  |
| <b>OR</b> |  |          |    |    |
| Q.3(B)    | Explain the following:<br>i) Angular Expressions<br>ii) Angular JS Animations  | 12M      | 3  | 3  |
| Q.4(A)    | Summarize the Event Emitter in Node JS.  | 12M      | 4  | 4  |
| <b>OR</b> |  |          |    |    |
| Q.4(B)    | a) Explain the Features of Node JS.<br>b) Write a note on Node JS Modules.   | 12M      | 4  | 2  |
| Q.5(A)    | How to Insert, Update and Delete the records in row into MySQL Table through NodeJS.   | 12M      | 5  | 3  |
| <b>OR</b> |  |          |    |    |
| Q.5(B)    | Explain the concept of MERN STACK with example.  | 12M      | 5  | 4  |

**\*\*\* END\*\*\***

Hall Ticket No:

Question Paper Code: 22MCAP107

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**  
(UGC-AUTONOMOUS)

**MCA I Year II Semester (R22) Regular & Supplementary End Semester Examinations, September - 2024**  
**DATA STRUCTURES AND ALGORITHMS**

**Time: 3Hrs**

**Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.

**In Q.No 1 to 5 answer either A or B only**

| Q.No      | Question   | Marks | CO | BL |
|-----------|--|-------|----|----|
| Q.1(A)    | Define Stack. Explain various operations on Stacks with a neat diagram.  | 12M   | 1  | 2  |
| <b>OR</b> |  |       |    |    |
| Q.1(B)    | Convert the following infix expression $(a+b)*(c^d)$ into post fix expression. Explain with algorithm.   | 12M   | 1  | 2  |
| Q.2(A)    | Differentiate array and linked list representation. Write an algorithms for inserting a node at the beginning, end and at a particular position for a singly linked list with a neat sketch. | 12M   | 2  | 3  |
| <b>OR</b> |  |       |    |    |
| Q.2(B)    | List various types of Linked list. Discuss about Circular Linked List with insertion operation.  | 12M   | 2  | 2  |
| Q.3(A)    | Explain Threaded Binary Tree and its Representations with Example.   | 12M   | 3  | 2  |
| <b>OR</b> |  |       |    |    |
| Q.3(B)    | Define breadth first search and depth first search. Compare BFS and DFS with a neat graph.   | 12M   | 3  | 2  |
| Q.4(A)    | Define hashing. Explain various collision resolving techniques with an example for each.   | 12M   | 4  | 3  |
| <b>OR</b> |  |       |    |    |
| Q.4(B)    | Explain Quick Sort algorithm. Apply Quick sort by considering the first element as pivot element for the array $A = [10, 7, 8, 9, 1, 5]$   | 12M   | 4  | 3  |
| Q.5(A)    | Analyze Travelling Salesman Problem with an example.   | 12M   | 5  | 4  |
| <b>OR</b> |  |       |    |    |
| Q.5(B)    | Explain the backtracking technique used to place queens on an $N \times N$ chessboard.   | 12M   | 5  | 2  |

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Hall Ticket No:

Question Paper Code: 22MCAP108

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**  
(UGC-AUTONOMOUS)

**MCA I Year II Semester (R22) Regular & Supplementary End Semester Examinations, September - 2024**  
**SOFTWARE ENGINEERING**

**Time: 3Hrs**

**Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.  
**In Q.No 1 to 5 answer either A or B only**

| Q.No      | Question  | Marks    | CO     | BL     |
|-----------|---|----------|--------|--------|
| Q.1(A)    | Define software engineering? What are its processing attributes?<br>Describe any one process model with a neat diagram. | 12 M     | 1      | 2      |
| <b>OR</b> |   |          |        |        |
| Q.1(B)    | Write short notes on the following.<br>i) Waterfall Model<br>ii) Incremental Model                                      | 6M<br>6M | 1<br>1 | 2<br>2 |
| Q.2(A)    | Define Requirement Engineering? Explain the types of software requirements in detail.                                   | 12M      | 2      | 3      |
| <b>OR</b> |   |          |        |        |
| Q.2(B)    | Write Short Notes on<br>i. Data model with an example and<br>ii. Object Model with an example.                          | 6M<br>6M | 2<br>2 | 2<br>2 |
| Q.3(A)    | Discuss the important of UML? Create any five UML diagrams for online banking application.                              | 12M      | 3      | 4      |
| <b>OR</b> |   |          |        |        |
| Q.3(B)    | Explain Class diagram and Use case diagram with Examples for each.  | 12M      | 3      | 3      |
| Q.4(A)    | What is integrating testing? Explain Black box testing and White box testing in detail.                                 | 12M      | 4      | 3      |
| <b>OR</b> |   |          |        |        |
| Q.4(B)    | What is behavioral testing? Explain the steps of flow graph based testing technique.                                    | 12M      | 4      | 3      |
| Q.5(A)    | Discuss in detail about the process of ISO 9001 certification in software engineering.                                  | 12M      | 5      | 3      |
| <b>OR</b> |   |          |        |        |
| Q.5(B)    | What is software reliability? Elaborate various software reliability measures in details.                               | 12M      | 5      | 2      |

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Question Paper Code: 22MCAP109

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**  
(UGC-AUTONOMOUS)

MCA I Year II Semester (R22) Regular & Supplementary End Semester Examinations, September - 2024  
**CRYPTOGRAPHY AND NETWORK SECURITY**

Time: 3Hrs

Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only.  
**In Q.No 1 to 5 answer either A or B only**

| Q.No      | Question  | Marks | CO | BL |
|-----------|---|-------|----|----|
| Q.1(A)    | (i) Convert the Given Text "CRYPTOGRAPHY" into cipher text using Rail Fence Technique                     | 6M    | 1  | 3  |
|           | (ii) Encrypt the following using play fair cipher using the keyword MONARCHY. "SWARAJ IS MY BIRTH RIGHT". | 6M    | 1  | 3  |
| <b>OR</b> |   |       |    |    |
| Q.1(B)    | Demonstrate the Shannon's theory of confusion and diffusion.  | 12M   | 1  | 3  |
| Q.2(A)    | (i) Explain the RSA algorithm. Compute cipher text for M=88, p=17 and q=11.                               | 6M    | 2  | 2  |
|           | (ii) Differentiate Conventional encryption and public key encryption.                                     | 6M    | 2  | 4  |
| <b>OR</b> |   |       |    |    |
| Q.2(B)    | (i) What is importance Chinese Remainder Theorem in cryptography? Explain.                                | 6M    | 2  | 2  |
|           | (ii) Explain various logarithms used for modular arithmetic operations with example.                      | 6M    | 2  | 2  |
| Q.3(A)    | Describe the steps in message digest generation in Secure Hash Algorithm in detail.                       | 12M   | 3  | 3  |
| <b>OR</b> |   |       |    |    |
| Q.3(B)    | (i) List the generally accepted requirements for a cryptographic hash function. Explain each requirement. | 6M    | 3  | 2  |
|           | (ii) Explain Digital signature scheme (DSS) and Digital Signature Algorithm (DSA) in detail.              | 6M    | 3  | 2  |
| Q.4(A)    | Explain various types of Key Management.  | 12M   | 4  | 2  |
| <b>OR</b> |   |       |    |    |
| Q.4(B)    | Enumerate the Diffie-Hellman Key Exchange.  | 12M   | 4  | 3  |
| Q.5(A)    | Discuss in detail the concept of IP security architecture.  | 12M   | 5  | 2  |
| <b>OR</b> |   |       |    |    |
| Q.5(B)    | Explain Intrusion detection system and its components in detail.  | 12M   | 5  | 2  |

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Hall Ticket No:

Question Paper Code: 22MCAP110

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**  
(UGC-AUTONOMOUS)

**MCA I Year II Semester (R22) Regular & Supplementary End Semester Examinations, September - 2024**  
**ARTIFICIAL INTELLIGENCE**

**Time: 3Hrs**

**Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.  
**In Q.No 1 to 5 answer either A or B only**

| Q.No      | Question  | Marks | CO | BL |
|-----------|---|-------|----|----|
| Q.1(A)    | Elaborate the applications of AI in detail.   | 12M   | 1  | 2  |
| <b>OR</b> |   |       |    |    |
| Q.1(B)    | What is Machine learning? Illustrate various types of Machine Learning                        | 12M   | 1  | 3  |
| Q.2(A)    | Discuss about components of NLP and their functions.  | 12M   | 2  | 2  |
| <b>OR</b> |   |       |    |    |
| Q.2(B)    | Illustrate the process of Chatbot with its architecture.                                      | 12M   | 2  | 3  |
| Q.3(A)    | How does remove noise from Images? Illustrate.  | 12M   | 3  | 3  |
| <b>OR</b> |   |       |    |    |
| Q.3(B)    | Explain in detail about Feature Detection, Recognition, and Feature Extraction.               | 12M   | 3  | 2  |
| Q.4(A)    | Elaborate the following concepts:<br>i)Google's DeepMind in AlphaGo<br>ii) Virtual Assistants | 12M   | 4  | 2  |
| <b>OR</b> |   |       |    |    |
| Q.4(B)    | Describe how the agents and environment are useful in reinforcement Learning.                 | 12M   | 4  | 3  |
| Q.5(A)    | How artificial intelligence is important for smart city? Illustrate                           | 12M   | 5  | 3  |
| <b>OR</b> |   |       |    |    |
| Q.5(B)    | Discuss in detail about the role of AI in Smart Transportation and Autonomous Vehicles.       | 12M   | 5  | 2  |

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Question Paper Code: 22MCAP401

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**  
(UGC-AUTONOMOUS)MCA I Year II Semester (R22) Regular & Supplementary End Semester Examinations, September - 2024  
**MACHINE LEARNING- ALGORITHMS & APPLICATIONS**

Time: 3Hrs

Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only.  
**In Q.No 1 to 5 answer either A or B only**

| Q.No   | Question  | Marks | CO | BL |
|--------|---|-------|----|----|
| Q.1(A) | (i) How will you design the learning system?  | 6M    | 1  | 2  |
|        | (ii) Discuss the types of machine learning.   | 6M    | 1  | 2  |
|        | <b>OR</b>   |       |    |    |
| Q.1(B) | Describe about the working of Bayes theorem and concept learning.                       | 12M   | 1  | 3  |
| Q.2(A) | Illustrate multiple linear regression with an example.                                  | 12M   | 2  | 4  |
|        | <b>OR</b>   |       |    |    |
| Q.2(B) | (i) How genetic algorithm works? Explain.   | 6M    | 2  | 4  |
|        | (ii) Demonstrate the working of nearest neighbor classifier.                            | 6M    | 2  | 4  |
| Q.3(A) | Explain Reinforcement Learning and its types in detail.                                 | 12M   | 3  | 2  |
|        | <b>OR</b>   |       |    |    |
| Q.3(B) | (i) Describe the concept of Markov Decision Process (MDP).                              | 6M    | 3  | 2  |
|        | (ii) Discuss about the SARSA algorithm.   | 6M    | 3  | 2  |
| Q.4(A) | (i) Explain the applications of clustering algorithm, in detail.                        | 6M    | 4  | 3  |
|        | (ii) Explain the concepts of clustering approaches. How it differs from classification. | 6M    | 4  | 2  |
|        | <b>OR</b>   |       |    |    |
| Q.4(B) | (i) Explain about Hierarchical clustering algorithm.                                    | 6M    | 4  | 2  |
|        | (ii) Identify the challenges of clustering algorithm.                                   | 6M    | 4  | 3  |
| Q.5(A) | (i) What is meant by Perceptron? Explain in detail.                                     | 6M    | 5  | 2  |
|        | (ii) What are the applications of Neural networks?                                      | 6M    | 5  | 2  |
|        | <b>OR</b>   |       |    |    |
| Q.5(B) | Compare biological neuron and artificial neuron.  | 12M   | 5  | 2  |

\*\*\* END\*\*\*

Hall Ticket No:

Question Paper Code: 22MCAP403

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**  
(UGC-AUTONOMOUS)

**MCA I Year II Semester (R22) Regular & Supplementary End Semester Examinations, September - 2024**  
**AGILE SOFTWARE DEVELOPMENT PROCESS**

**Time: 3Hrs**

**Max Marks: 60**

Attempt all the questions. All parts of the question must be answered in one place only.  
**In Q.No 1 to 5 answer either A or B only**

| Q.No      | Question  | Marks | CO | BL |
|-----------|---|-------|----|----|
| Q.1(A)    | Explain Modelling and usefulness of OO development in detail.                                 | 12M   | 1  | 2  |
| <b>OR</b> |   |       |    |    |
| Q.1(B)    | Explain Unified Process and its characteristics   | 12M   | 1  | 2  |
| Q.2(A)    | Explain Conceptual model of UML   | 12M   | 2  | 2  |
| <b>OR</b> |   |       |    |    |
| Q.2(B)    | Explain Dynamic Modelling in detail.  | 12M   | 2  | 2  |
| Q.3(A)    | Explain various roles in Agile process. How are these roles different from traditional roles? | 12M   | 3  | 2  |
| <b>OR</b> |   |       |    |    |
| Q.3(B)    | What is the working principle of Agile? What value is provided by Agile? Discuss in detail.   | 12M   | 3  | 2  |
| Q.4(A)    | Explain Life cycle phases in Agile framework.   | 12M   | 4  | 2  |
| <b>OR</b> |   |       |    |    |
| Q.4(B)    | What are various advanced Scrum applications? How are they applicable?                        | 12M   | 4  | 2  |
| Q.5(A)    | Write about Design Organization in devops.  | 12M   | 5  | 2  |
| <b>OR</b> |   |       |    |    |
| Q.5(B)    | Illustrate Continuous Delivery in devops.   | 12M   | 5  | 4  |

**\*\*\* END\*\*\***