

Hall Ticket No:

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Question Paper Code: 20MCAP106

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

MCA I Year II Semester (R20) Supplementary End Semester Examinations – June 2022**JAVA PROGRAMMING**

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 Part A or Part B only.

Q.No	Question	Marks	CO	BL
Q.1(A)	Explain the features of java and say why it is important.	12M	1	2
OR				
Q.1(B)	Distinguish between goto and labelled goto, break and labelled break, continue and labelled continue statements with suitable examples.	12M	1	3
Q.2(A)	Write the procedure to a create package with multiple public classes.	6M	2	3
	Write the differences between interface and abstract class.	6M	2	1
OR				
Q.2(B)	Explain the polymorphism and overloading with an example.	12M	2	2
Q.3(A)	Describe serialization and deserialization with suitable examples.	12M	3	2
OR				
Q.3(B)	Describe File Writer and File Reader class methods with suitable examples.	12M	3	2
Q.4(A)	Why Exceptions are raised? Explain the Java keywords for catching and handling exceptions with suitable examples.	12M	4	2
OR				
Q.4(B)	Explain Exception Handling and Multiple catch statement in Java with an example.	12M	4	2
Q.5(A)	Explain about any 4 GUI based Input/Output controls with suitable examples.	12M	5	2
OR				
Q.5(B)	What are the Swing components? Explain in detail with suitable examples.	12M	5	2

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Question Paper Code: 20MCAP107

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

MCA I Year II Semester (R20) Supplementary End Semester Examinations – June 2022**DATABASE MANAGEMENT SYSTEMS**

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)	What are the drawbacks of File System? Explain the advantages of Database Management System.	12M	1	2
OR				
Q.1(B)	Explain the different components in ER Diagram. Draw the ER diagram for Library Management System.	12M	1	2
Q.2(A)	Explain the DDL, DML and TCL SQL commands with the examples. Write SQL command to create a view on Employee table. A view should contain employee name, and department. Other fields in the employee table should be ignored.	12M	2	3
OR				
Q.2(B)	Explain the fundamental operations of Relational Algebra with examples.	12M	2	3
Q.3(A)	Explain the 4 NF and 5 NF with the example.	12M	3	4
OR				
Q.3(B)	What are the anomalies caused by the data redundancy? Write short notes about lossy and non-loss decomposition.	12M	3	4
Q.4(A)	Explain the ACID properties of transaction. Write short notes on Serializability and its types.	6 + 6	4	2
OR				
Q.4(B)	Explain the two phase locking protocol for concurrency control.	12M	4	2
Q.5(A)	What is trigger? Create a trigger using SQL command and demonstrate the use of it with your own example.	12M	5	4
OR				
Q.5(B)	What is NOSQL? Write short notes on column oriented database.	12M	5	4

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Question Paper Code: 20MCAP108

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

MCA I Year II Semester (R20) Supplementary End Semester Examinations – June 2022**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)	i. Elaborate on Asymptotic Notations with examples.	6M	1	6
	ii. Explain how analysis of linear search is done with a suitable illustration.	6M		4
OR				
Q.1(B)	Write a program to implement the operations (insert, delete, and search) on circular linked list.	12M	1	3
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Q.2(A)	Distinguish between Quick sort and Merge sort, and arrange the following numbers in increasing order using merge sort. (18, 29, 68, 32, 43,37, 87, 24, 47, 50)	12M	2	4
OR				
Q.2(B)	Write an algorithm for Heap sort and calculate its complexity with example.	12M	2	2
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Q.3(A)	Explain the algorithm for insertion and deletion in B+ Tree with an example.	12M	3	4
OR				
Q.3(B)	i) Discuss the rotations of AVL Trees	6M	3	3
	ii) Find the In-order, Pre-order and Post-order traversals using above constructed Binary Search Tree	6M		5
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Q.4(A)	List and explain the types of graph with an example.	12M	4	4
OR				
Q.4(B)	How to do indexing and retrieving items using hashing? Explain with an example.	12M	4	5
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Q.5(A)	How will you solve a knapsack problem using dynamic programming? Illustrate.	12M	5	2
OR				
Q.5(B)	Find an optimal solution to the knapsack instance $n = 7$, $m = 15$ ($p_1, p_2, p_3, \dots, p_7$) = (10, 5, 15, 7, 6, 18, 3) and ($w_1, w_2, w_3, \dots, w_7$) (2, 3, 5, 7, 1, 4, 1)	12M	5	4

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MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

MCA I Year II Semester (R20) Supplementary End Semester Examinations – June 2022

BLOCKCHAIN TECHNOLOGY

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)	How to calculate the message digest to a variable length message using SHA 512? Illustrate the process with a neat architecture.	12M	1	2
OR				
Q.1(B)	Suppose that two parties A and B wish to set up a common secret key (D-H key) between themselves using the Diffie Hellman key exchange technique. They agree on 7 as the modulus and 3 as the primitive root. party A chooses 2 and party B chooses 5 as their respective secrets. Find their D-H key by writing the DH key algorithm	12M	1	3
OR				
Q.2(A)	Illustrate process of the fault tolerance system core models. Also discuss Two General's Problem concept with example scenario.	12M	2	3
OR				
Q.2(B)	Explain distributed database with neat diagram. Also discuss the properties and features of distributed system.	12M	2	2
OR				
Q.3(A)	How to create a Blockchain Network? Explain in detail with example scenario.	12M	3	3
OR				
Q.3(B)	Discuss in detail on Soft Fork and Hard Fork over a blockchain network and the role of components in it.	12M	3	2
OR				
Q.4(A)	Illustrate the hash value evaluation using Merkle tree. Discuss in detail about various types of Wallets and their usages.	12M	4	3
OR				
Q.4(B)	Discuss in detail about various Mining strategies followed in block chain Network. Explain the concept of Smart contract and its Working principles.	12M	4	2
OR				
Q.5(A)	How does EVM work? Explain its working principle.	12M	5	3
OR				
Q.5(B)	Discuss in detail about blockchain applications.	12M	5	2

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Question Paper Code: 20MCAP110

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

MCA I Year II Semester (R20) Supplementary End Semester Examinations – June 2022
AI TECHNIQUES AND 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)	Explain the various applications of AI & ML, and explain the types of ML with examples.	12M	1	L3
OR				
Q.1(B)	i) Discuss supervised and unsupervised learning with real time examples and what is the difference between them? ii) Justify the statement "Deep Learning (DL) is the fancy term for Artificial Neural Network (ANN)"?	12M	1	L4 L2
Q.2(A)	i) How to build chatbot? Discuss the architecture of chatbot? ii) Explain speech synthesis, speech modelling, and virtual assistants with an example	12M	2	L1 L3
OR				
Q.2(B)	Discuss the enterprise applications of NLP and how it is useful in real life in detail.	12M	2	L4
Q.3(A)	How reinforcement learning is applied in robotics and diagnostic systems? Explain in detail.	12M	3	L2
OR				
Q.3(B)	Illustrate the capabilities of computer vision. How to use computer vision on mobile devices? Explain	12M	3	L4
Q.4(A)	Demonstrate the working of reinforcement learning in game playing like Deep Blue in Chess, IBM Watson in Jeopardy.	12M	4	L5
OR				
Q.4(B)	How is reinforcement applied on a learning agent? Explain the "Elements of Reinforcement Learning".	12M	4	L3
Q.5(A)	Analyze working of smart applications such as smart grids and smart manufacturing.	12M	5	L6
OR				
Q.5(B)	How artificial intelligence's smart applications like smart transportation, autonomous vehicles, and smart homes are applied in real life?	12M	5	L1

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MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

MCA I Year II Semester (R20) Supplementary End Semester Examinations – June 2022**DESIGN THINKING**

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)	How Principles of design thinking helps to find out the ways to the problems of society?	12M	1	1
OR				
Q.1(B)	“Empathy define and Ideate” play a major role for framing successful ideas to establish a frame work for design thinking. Explain.	12M	1	1
Q.2(A)	Empathy and understanding of people together helps to design experiences that create opportunities for active engagement and participation. Give examples of “Empathy” of recent times.	12M	2	1
OR				
Q.2(B)	Explain the difficulties faced by the students in the Decision Making Process.	12M	2	1
Q.3(A)	In brainstorming, what is the best way – people talking or people working independently? Explain.	12M	3	2
OR				
Q.3(B)	Define Mind-mapping. Mind-map your experiences of difficulties in writing research papers.	12M	3	2
Q.4(A)	‘Prototyping plays a major role in innovation and achieving competitive Uniqueness’. Elucidate.	12M	4	3
OR				
Q.4(B)	What is competitive Uniqueness? Explain it with an example (ex; Launch of iPhone).	12M	4	3
Q.5(A)	How design thinking can be extended in new ways to create ideas that are equal to the challenges we all face in our day to day life?	12M	5	3
OR				
Q.5(B)	Suppose If you are a venture capitalist, how design thinking can help you peer into the future?	12M	5	3

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