



MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

Maisammaguda, Dhulapally, (Post Via Kompally), Secunderabad-500100.

M.TECH I SEMESTER REGULAR EXAMINATIONS, APRIL-2022

SUBJECT:ADVANCED DATA STRUCTURES

BRANCH:CSE(CSE)

Time: 3 hours

Max. Marks: 70

Answer any five questions

5X14M=70 M

Q.NO.	QUESTIONS	MARKS	*BT LEVEL	CO
1.	a)Discuss the asymptotic notations. How does one measure the efficiency of an algorithm? b)Define Best, Average and Worst case time complexities.	10 4	L3	1
2.	a)Explain with an example how to find the middle element of a singly linked list without iterating the list more than once. b)Explain Doubly linked list representation with a clear example.	7 7	L2	1
3.	a)Construct max heap for the following sequence of input: 1, 3, 5, 4, 6, 13, 10, 9, 8, 15, 17. b) What is the resultant of max heap after 4 th delete?	7 7	L4	2
4.	Given an input $\{10, 19, 11, 33, 22, 236, 112, 178, 53, 446, 14\}$ as key values a hash function $h(key)=key \bmod (m=9)$, where m is the size of the hash table, show the resultant in the hash table: (i) Chaining hash table . (ii) Open addressing hash using linear probing with $h1(key,i)=(h(key)+i) \bmod m$.	14	L4	3
5.	Let T be a binary tree, r is the root node of T and R is the left subtree of r . Write an algorithm to display the values of non-leaf (internal) nodes of the left subtree R . Compute the running time of your algorithm. Illustrate your algorithm for any sample input.	14	L3	4
6.	Let $G=(V,E)$ be a complete and undirected graph, where V is a vertex set and E is an edge set. Assume s and t are two vertices of the graph G and s starts vertex of the graph. Write an algorithm to find a path between the vertices s and t .	14	L3	4
7.	a) Write a program to find maximum element in the Binary search tree. b) What is the difference between AVL tree and red black tree? Discuss with an example.	7 7	L2	5
8.	a) What is B-tree? How do you construct the B-tree? Explain with example. b) Explain KMP Algorithm with example.	7 7	L2	5

*Bloom's Taxonomy Level (BT Level): L1-Remember, L2- Understand, L3- Apply, L4- Analyse, L5- Evaluate, L6- Create.


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BRANCH:CSE(CSE)
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Q.NO.	QUESTIONS	MARKS	*BT LEVEL	CO
9.	c)Discuss the asymptotic notations. How does one measure the efficiency of an algorithm? d)Define Best, Average and Worst case time complexities.	10 4	L3	1
10.	c)Explain with an example how to find the middle element of a singly linked list without iterating the list more than once. d)Explain Doubly linked list representation with a clear example.	7 7	L2	1
11.	c)Construct max heap for the following sequence of input: 1, 3, 5, 4, 6, 13, 10, 9, 8, 15, 17. d) What is the resultant of max heap after 4 th delete?	7 7	L4	2
12.	Given an input $\{10, 19, 11, 33, 22, 236, 112, 178, 53, 446, 14\}$ as key values a hash function $h(key)=key \bmod (m=9)$, where m is the size of the hash table, show the resultant in the hash table: (iii)Chaining hash table . (iv)Open addressing hash using linar probing with $h1(key,i)=(h(key)+i) \bmod m$.	14	L4	3
13.	Let T be a binary tree, r is the root node of T and R is the left subtree of r . Write an algorithm to display the values of non-leaf (internal) nodes of the left subtree R. Compute the running time of your algorithm. Illustrate your algorithm for any sample input.	14	L3	4
14.	Let $G=(V,E)$ be a complete and undirected graph, where V is a vertex set and E is an edge set. Assume s and t are two vertices of the graph G and s starts vertex of the graph. Write an algorithm to find a path between the vertices s and t .	14	L3	4
15.	a) Write a program to find maximum element in the Binary search tree. b) What is the difference between AVL tree and red black tree? Discuss with an example.	7 7	L2	5
16.	a) What is B-tree? How do you construct the B-tree? Explain with example. b) Explain KMP Algorithm with example.	7 7	L2	5

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M.TECH I SEMESTER REGULAR EXAMINATIONS, APRIL-2022

SUBJECT:ETHICAL HACKING AND COMPUTER FORENSIC

BRANCH: CSE(CSE)

Time: 3 hours

Max. Marks: 70

Answer any five questions

5X14M=70 M

Q.NO.	QUESTIONS	MARKS	*BT LEVEL	CO
1.	a) State and explain the component parts of the information security program.	7	L2	1
	b) Interpret the six basic steps of the ethical hacking assignment.	7	L3	
2.	a) What is enumeration? Infer the enumeration step of security testing.	7	L4	1
	b) List out and describe various phases of an attack in detail.	7	L2	
3.	a) Show the differences between penetration testing and ethical hacking.	7	L2	2
	b) Examine the process of planning for a controlled attack.	7	L4	
4.	a) Summarize the inherent limitations and imposed limitations.	7	L2	2
	b) Outline the important business challenges of ethical hacking.	7	L2	
5.	a) Explain the implantation of forensic duplication and investigation.	7	L2	3
	b) Review the common RAID configurations and discuss various ways to acquire data on these large storage device.	7	L2	
6.	a) Analyze the procedure for collecting evidence in private-sector incident scenes.	7	L4	4
	b) Illustrate the methods for validating and testing forensics tools.	7	L2	
7.	a) Inspect the guidelines for processing the law enforcement crime scenes.	7	L4	4
	b) Demonstrate the process of examining the FAT and NTFS disks.	7	L2	
8.	a) Summarize the mechanism for validating with digital forensics tools.	7	L2	5
	b) Examine data to be analyzed in a digital forensics investigation.	7	L4	

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M.TECH I SEMESTER REGULAR EXAMINATIONS, APRIL-2022
SUBJECT:MACHINE LEARNING
BRANCH: CSE(CSE)
Time: 3 hours
Max. Marks: 70
Answer any five questions
5X14M=70 M

Q.NO.	QUESTIONS	MARKS	*BT LEVEL	CO
1.	a) What is an Exception Handling in Python? b) Write a Python program to open a file having no write permission but trying to writing the data. Handle this situation using exception handling mechanism.	7 7	L3	1
2.	(a) What is a decision tree? And explain about decision tree algorithm? (b) Write a detail note on naïve bayes linear models?	7 7	L2	1
3.	(a) Explain the following (i) Matrix completion (ii) Generative Models (b) How Matrix factorization works in PCA. Explain in detail?	4 3 7	L3	2
4.	(a) Explain the evaluation technology of machine learning algorithm? (b) What is Boosting? Discuss with neat relevant example?	7 7	L4	3
5.	(a) What is Random forest? Explain with example? (b) Define Model Selection & Discuss in detail?	7 7	L4	3
6.	(a) What is Sparse Modelling, Explain its functions? (b) Define Semi supervised learning	10 4	L3	4
7.	(a) Explain the concept of modeling sequence timing series data? (b) Define Active learning	10 4	L3	4
8.	(a) Discuss scalable Machine learning with distributed & online? (b) Explain the various models for IOT applications discuss with example?	7 7	L3	5

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M.TECH I SEMESTER REGULAR EXAMINATIONS, APRIL-2022

SUBJECT: RESEARCH METHODOLOGY & IPR

BRANCH: COMMON TO (SE, EPS, TE, MD, CSE)

Time: 3 hours

Max. Marks: 70

Answer any five questions

5X14M=70 M

Q.NO.	QUESTIONS	MARKS	*BT LEVEL	CO
1.	a) Describe the scope and objectives of research problem b) What is research problem? Explain various sources of research problem.	7 7	L4	1
2.	a) Briefly explain various techniques to analyze data. b) List out the errors in selecting a research problem.	7 7	L4	1
3.	a) How to develop a paper based on research proposal? Explain in detail.8-- b) Explain various effective approaches for developing review of literature.	7 7	L3	2
4.	a) "Plagiarism plays a significant role in research" Comment on this statement. b) Describe the format of research proposal with suitable example.	7 7	L3	2
5.	a) Illustrate the procedure for grants of patents. b) What is copy right? Explain its significance in the research.	7 7	L2	3
6.	a) Describe the scope of patent rights. b) What do you mean by transfer of technology? Explain types of technology transfer.	7 7	L4	4
7.	a) What are geographical indications? Briefly explain types of geographical indications. b) Briefly explain types of patent databases.	7 7	L3	4
8.	a) How does IPR protect computer programs? Explain with an example. b) Illustrate new and latest developments in IPR.	7 7	L4	5

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M.TECH I SEMESTER REGULAR EXAMINATIONS, APRIL-2022

SUBJECT:SOFTWARE ARCHITECTURE AND DESIGN PATTERNS

BRANCH: CSE(CSE)

Time: 3 hours

Max. Marks: 70

Answer any five questions

5X14M=70 M

Q.NO.	QUESTIONS	MARKS	*BT LEVEL	CO
1.	a) Show the architecture reconstruction process and explain each phase of architecture reconstruction process	7	L2	1
	b) Categorize and discuss the architectural structures depending on the broad nature of the elements.	7	L4	
2.	a) Name the architecture evaluation factors and describe each factor.	7	L2	2
	b) Illustrate the step-by-step procedure for the implementation of CBAM.	7	L3	
3.	a) What makes a software product line work? Explain in detail.	7	L2	3
	b) Summarize the major enhancements related to the software architecture in future.	7	L2	
4.	a) Identify the major consequences that made the software product lines difficult.	7	L3	3
	b) Discuss the role of the product line's scope in building an architecture for a software product line.	7	L2	
5.	a) How do we describe the design patterns? Outline the design patterns using a consistent format.	7	L2	4
	b) Examine the key consequences of the Builder pattern and implementation issues to be considered.	7	L3	
6.	a) Inspect various approaches for finding the design pattern that is right for the given problem.	7	L4	4
	b) Elucidate the applicability of Flyweight pattern along with the issues when implementing the Flyweight pattern	7	L2	
7.	a) Demonstrate the usage of the Interpreter behavioral pattern.	7	L2	5
	b) Analyze the case study in interoperability of world wide web.	7	L4	
8.	a) Write short notes on the following patterns. i) Mediator ii) Observer	7	L2	5
	b) Interpret the implementation variants and alternatives of iterator pattern.	7	L3	

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