MALLA REDDY COLLEGE OF ENGINEERING &TECHNOLOGY

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

III B.TECH I SEMESTER R20 REGULAR

QUESTION BANK

(UNITWISE ,MODEL AND PREVIOUS QUESTION PAPERS)

2023-24

LIST OF SUBJECTS

CODE	NAME OF THE SUBJECT
R20A0513	ARTIFICIAL INTELLIGENCE
R20A0514	DIGITAL FORENSICS
R20A0511	SOFTWARE ENGINEERING
R20A0515	SCRIPTING LANGUAGES
R20A0512	COMPILER DESIGN

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III B.TECH I SEMESTER R20 REGULAR

QUESTION BANK

(UNITWISE ,MODEL AND PREVIOUS QUESTION PAPERS)

2023-24

R20A0513: ARTIFICIAL INTELLIGENCE

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R20A0513: ARTIFICIAL INTELLIGENCE

UNITWISE QUESTIONS

S.No		UNIT-1
1		Describe the four categories under which AI is classified with examples? Define Artificial Intelligence? List the fields that form the basis for AI?
2		
3		Differentiate Informed & Uninformed search. Give examples?
		Explain the following uninformed search strategies with examples. (a) Breadth First Search. (b) Depth-first with Iterative Deepening (c) Depth First Search (d) Depth Limited Search
4		Explain the following informed search strategies with examples. (a) Hill Climbing (b) Generic Best-First (c) A*
5		Solve the following Crypt Arithmetic Problem. S E N D + M O R E ---------- M O N E Y ----------
		UNIT-2
1.		Give a brief note on minimax&Alpha-beta pruning with example and neat sketch?
2.		Discuss Resolution&inference in first-order logic?

3.		Write down the logical representations for the following sentences, suitable for use with Generalized Modus Ponens. a) Horses, cows, and pigs are mammals.
4.		Give a brief note on minimax&Alpha-beta pruning with example and neat sketch?
5.		Discuss Resolution&inference in first-order logic?
6		Write down the logical representations for the following sentences, suitable for use with Generalized Modus Ponens. b) Horses, cows, and pigs are mammals. c) An offspring of a horse is a horse. d) Bluebeard is a horse. e) Bluebeard is Charlie's parent. f) Offspring and parent are inverse relations. g) Every mammal has a parent.
7		Explain the difference between forward chaining and backward chaining?
8		Discuss a) Types of random variables b) prior probability c) posterior probability d)Axioms of probability
9		What is AO* search? Explain various stages of AO* search with an example?

		UNIT-3
1.		Explain different types of knowledge and Discuss how interaction of AI with real world and components involved in showing intelligent?
2.		What are the issues in knowledge representation in AI?
3.		Describe Bayes theorem? Define Non monotonic reasoning? What is Uncertainty Measure? Explain briefly
4.		Discuss the following knowledge representation schemes: a) Logic representation b) Semantic network c) Frame representation d) Production rules
5.		Discuss baye's rule and apply the baye's rule for the following. A bag I contain 4 white and 6 black balls while another Bag II contains 4 white and 3 black balls. One ball is drawn at random from one of the bags, and it is found to be black. Find the probability that it was drawn from Bag I.
6		Apply the baye's rule for the following. A man is known to speak truth 2 out of 3 times. He throws a die and reports that the number obtained is a four. Find the probability that the number obtained is actually a four.
7		Explain Bayesian Belief Networks with example?
		UNIT-4
1.		What is a decision tree? Explain the decision tree learning algorithm with an example?
2.		Define the following a) Inductive learning. b) Learning Decision Tree.
3.		What is rote learning? Explain in detail with an example?
4.		What is learning by taking advice? Explain in detail with an example?
5.		What is learning from examples and its types?
6		Discuss about Winston's Learning Program
		UNIT-5
1.		Explain Expert Systems with example.
2.		Explain the representation and use of Domain knowledge
3.		Discuss about reasoning with knowledge with neat diagram

4.		Explain Expert system shells?
5.		How are experts system built? Explain
6		Discuss knowledge Acquisition?

R20

Code No: R20A0513

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

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III B.Tech I Semester Supplementary Examinations, May/June 2023

Artificial Intelligence

(CSE, IT, CSE-CS, CSE-DS, CSE-IOT)

Roll No										

Time: 3 hours **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1	***A***	Briefly Explain the history of Artificial Intelligence.	**[7M]**
	B	Explain the Heuristic Search Techniques.	**[7M]**
		OR	
2	***A***	Discuss A* Algorithm in Detail.	**[7M]**
	B	Explain basic agent and Learning Agents.	**[7M]**
		SECTION-II	
3	***A***	Explain Min.Max game problem with a game tree in which MIN plays first.	**[7M]**
	B	Explain the Forward-Chaining Algorithm for Propositional Logic.	**[7M]**
		OR	
4	***A***	Explain the syntax and semantics of Propositional Logic.	**[6M]**
	B	Give a brief note on Alpha-Beta Pruning.	**[8M]**
		SECTION-III	
5	***A***	Explain the issues in Knowledge Representation. Define Inheritance in Semantic Net.	**[7M]**
	B	Explain knowledge representation schemes.	**[7M]**
		OR	
6	***A***	Explain Semantic Networks for Knowledge Representation.	**[4M]**
	B	Discuss the Bayesian Belief Networks with an example.	**[10M]**
		SECTION-IV	
7	***A***	Briefly discuss about different types of Learning.	**[7M]**
	B	Discuss Supervised Learning Algorithms in detail.	**[7M]**
		OR	
8	***A***	Describe the role of information gain in Decision Tree Learning.	**[7M]**
	B	Discuss about the Winston's Learning Program.	**[7M]**
		SECTION-V	
9	***A***	Explain the Issues for problem solving.	**[7M]**
	B	What is Inference Engine? Describe Backward and Forward chaining Mechanism used by an inference engine?	**[7M]**
		OR	
10	***A***	Explain Expert system shells.	**[8M]**
	B	Explain Expert Systems with example.	**[6M]**

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III B.TECH I SEMESTER R20 REGULAR

QUESTION BANK

(UNITWISE, MODEL AND PREVIOUS QUESTION PAPERS)

2023-24

R20A0514: DIGITAL FORENSICS

R20A0514: DIGITAL FORENSICS

UNITWISE QUESTIONS

S.No		UNIT-1
1		1. a) Describe in detail about Forensics science?
		b) Explain different types of Laws and Principles of Forensic Science?
2		2. a) What is meant by digital forensics?
		b) Explain in detail about History of Digital Forensics?
3		3. a) Describe the term computer Crime in detail?
		b) What are steps that involve Criminalistics in Police investigation?
4		4. a) Explain different challenges faced by digital forensics?
		b) Explain the term computer forensics in detail?
		UNIT-2
1		a) How to Identify digital evidence? Explain in detail.
		b) What are steps to understand the Rules of Evidence?
2		a) Explain How to Collect Evidence in Private-Sector Incident Scenes.
		b) Describe in detail about Processing Law Enforcement Crime Scenes.
3		. a) Explain Different Terms Used in Warrants?
		b) How to Secure a Computer Incident or Crime Scene.
4		Explain in detail about Preparing for a Search.
5		What are steps to Seize Digital Evidence at the Scene?
		UNIT-3
1		How to Create and manage shared folders using operating system
2		a) What is the Importance of the forensic mindset
		b) Define the workload of law enforcement? Explain in Detail.
3		Explain different Types of Evidences?
4		a) Define who should be notified of a crime? Explain with example.

		b) Explain in detail about Parts of gathering evidence.
		UNIT-4
1		. a) Explain how to prepare a computer investigation.
		b) Describe how to conduct an investigation.
2		2. Describe procedures for corporate high-tech investigations.
3		3. a) Explain how to complete and critique a case.
		b) Explain in detail about Overview of network forensics?
4		What are the Open-source security tools for network forensic analysis?
5		a) Explain the concept of Employee Termination Cases with different examples.
		b) Describe about Attorney-Client Privilege Investigations.
6		. Explain different types of Challenges in Network Forensics?

		UNIT-5
1		a)What are the different types of Mobile forensics techniques?
		b) Explain about Mobile forensics tools in detail?
2		a) Describe in detail about Recent trends in mobile forensic technique?
		b) What are the Techniques to search and seizure electronic evidence?
3		Explain in detail about Legal Aspects of Digital Forensics?

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III B.TECH I SEMESTER R20 REGULAR

QUESTION BANK

R20A0514: DIGITAL Forensics

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PREVIOUS QUESTION PAPERS

R20

Code No: **R20A6210**

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Supplementary Examinations, May/June 2023

Digital Forensics

(CSE)

Roll No										

Time: 3 hours **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1	*A*	What is cyber crime?	[7M]
	B	What are the various modes or manners of committing Cybercrime?	[7M]
		OR	
2	*A*	What are the various types of cyber crimes?	[7M]
	B	Write a comment over following task. 'A fraudulent email which is trying to obtain your username and password'.	[7M]

SECTION-II

3	*A*	As the courts are functioning online since the pandemic. Discuss the issues for digital evidence collection and presentation before the courts and legal document.	[7M]
	B	Primary, District and Tertiary referral hospital generating vast amount of patient data. They are working under interconnected information network. What are steps needed to secure personal medical records	[7M]
		OR	
4	*A*	Explain about computer incident and crime sense	[7M]
	B	Discuss the area of cyber attacks and risk to the users of digital mean.	[7M]

SECTION-III

5	*A*	Discuss seizing digital evidences in crime scene analysis.	[7M]
	B	Explain the standards procedure of evidence gathering	[7M]
		OR	
6	*A*	What is the workload of law enforcement agencies for digital gathering of evidences?	[7M]
	B	What type training is required for digital forensics. Define who should be notified of a crime	[7M]

SECTION-IV

7	*A*	Provide two reasons why it is very important for a police investigator to routinely critically assess all of the information they encounter.	[7M]
	B	What are the skills a modern-day officer must achieve to respond to events and investigate crimes?	[7M]
		OR	
8	*A*	What is the first step in developing an investigative mind-set?	[7M]
	B	What is the level of forensic knowledge that a modern day investigator must achieve to become an effective investigator?	[7M]

SECTION-V

9	*A*	How does mobile forensics differ from other types of forensics?	**[7M]**
	B	Write standard operating procedure as per the clauses given in Indian IT Act 2000, information gathering for crime investigation.	**[7M]**
		OR	
10	*A*	What are mobile forensics tools for investigation and analysis of data?	**[7M]**
	B	What are rights protected in the IT Act 2000? Discuss the clauses for the seizure of personal devices	**[7M]**

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R20

Code No: R20A6210

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

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III B.Tech I Semester Regular Examinations, December 2022

Digital Forensics

(CSE)

Roll No										

Time: 3 hours **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1	***A***	What is forensics science? Write the steps to collect forensics data in a crime investigation.	**[7M]**
	B	What is digital forensics? Write the steps to collect digital forensics data in digital audit.	**[7M]**
		OR	
2		Why forensics is important in modern crime investigation and How digital forensics help to nab the culprit discuss in details.	**[14M]**

SECTION-II

3	***A***	What are the steps for cyber crime scene analysis?	**[7M]**
	B	What are challenges for collecting evidence in private-sector indent scenes?	**[7M]**
		OR	
4	***A***	Write the standard practice for securing computer incident and crime scene.	**[7M]**
	B	What are the steps for digital evidence collection and presentation before the courts and legal document.	**[7M]**

SECTION-III

5	***A***	What are grounds for seizing digital evidences in crime scene analysis.	**[7M]**
	B	Discuss the standards procedure of evidence gathering	**[7M]**
		OR	
6	***A***	What are types of digital evidence? Write the process to safe guard the digital evidences	**[7M]**
	B	What is the workload of law enforcement agencies for digital gathering of evidences?	**[7M]**

SECTION-IV

7	***A***	What are the main procedures to perform network forensics.	**[7M]**
	B	Discuss network forensics tool both open source and vendor specific	**[7M]**
		OR	
8	***A***	Write the procedure to perform High-Tech forensics investigations	**[7M]**
	B	Discuss the main attributes and performance matrix for network analysis	**[7M]**

SECTION-V

9	***A***	Discuss the mobile forensics techniques with suitable examples	**[7M]**
	B	What are mobile forensics tools for investigation and analysis of data?	**[7M]**
		OR	
10	***A***	Discuss the standard procedure for mobile forensics data gathering, searching and evidence preparation steps	**[7M]**

B Discuss a legal case study to apply some of the clauses of Indian IT Act 2000. **[7M]**

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III B.TECH I SEMESTER R20 REGULAR

QUESTION BANK

(UNITWISE, MODEL AND PREVIOUS QUESTION PAPERS)

2023-24

R20A0511: SOFTWARE ENGINEERING

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R20A0511: SOFTWARE ENGINEERING

UNITWISE QUESTIONS

S.No		UNIT-1
1		Explain the evolving role of software and explain changing nature of software indetail
2		Explain“ Software myth”?Discuss on various types of software myths and The true aspects of these myths
3		What is Software Maturity Model and Explain in detail about the CapabilityMaturityModel Integration (CMMI)Process?
4		DescribeSDLC?CompareanytwoSoftwareDevelopmentModelsindetail
5		Explain Waterfall Model and compare with Prototype Modeling.
		UNIT-2
1		Explainrequirementengineeringprocess
2		Comparefunctionalrequirementswithnon-functionalrequirements
3		Discusshowfeasibilitystudiesareimportantinrequirement engineeringprocess.
4		Explain context models, Behavioral models, Data models and Object Model inbriefly
5		Discussbrieflyhowrequirementvalidation isdone?
		UNIT-3
1		Discussbrieflythefollowingfundamentalconceptsofsoftwaredesign:
		i) Abstractionii)Modularityiii)Informationhiding.
2		Explain software architecture in adetail manner
3		WhatareGolden Rules inDesign Engineering.
4		Discuss architectural styles and patterns.
5		What are the design concept sin software engineering?
		UNIT-4
1		Explainabouttheimportanceofteststrategiesforconventionalsoftware
2		Compare black box testing with white box testing and Compare Alpha TestingwithBeta Testing

3		a)Demonstrate art of debugging

		B) Explain system testing in details.
4		Explain about software risks?
5		Elaborate the concepts of Risk management Reactive vs Proactive RiskStrategies, How the risk will be identified and Explain the RMMM Planin brief.
		UNIT-5
1		Explain about Quality concepts?
2		Explain software quality assurance
3		Explainin detail ISO9000 quality standards
4		Explain about Software Reviews and formal technical reviews
5		Discusss oftwarereliability?

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III B.TECH I SEMESTER R20 REGULAR

QUESTION BANK

(UNITWISE, MODEL AND PREVIOUS QUESTION PAPERS)

2023-24

R20A0515: SCRIPTING LANGUAGES

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R20A0515: SCRIPTING LANGUAGES

UNITWISE QUESTIONS

S.No		UNIT-1
1		1Compare Programming Languages and Scripting Languages?
2		2. Describe the different data types in java script with programs.
3		3.List various conditional statements in Java Script with Programs. 4. write a Javascript to factorial of a given number.
4		4.Explain the various looping statements in Java script.
5		5. Explain how to create an array & access the elements of an array in Java script. with program.
6		6.What are functions? Explain how to create and call functions in Java Script with program.
7		7. Define Object. Explain how to access object Properties and methods in Java script with program.
		UNIT-2
1		Define Event & Event handler in Java Script. Explain the following Event handlers with programs in Java Script? a) keyboard event b) window events
2		Explain the following Event handlers with programs in Java Script? a) form events b) mouse events
3		What is a frame? Explain <frame> and <frameset>tags with its attributes and examples.
4		What is a form? Create a form for student information. Write a java script code to find total, average, result and grade.

		UNIT-3
1		What are datatypes and variables supported by perl.
2		Explain the types of operators in perl with programs.
3		Discuss different conditional statements in perl with programs.
4		List various looping statements in perl with programs.
5		Explain about Built-in functions in Perl with example programs?
6		Explain about Hashes & Lists in Perl with example Programs?
7		Define Pattern matching. Explain regular expression operators with program?
		UNIT-4
1		Explain about Call by value & call by reference in PHP with programs?
2		Explain the following arrays in PHP with Programs? a)Indexed arrayb) Associative array
3		Explain about various string functions in PHP with programs?
4		Explain about file handling in PHP with Programs?
5		Explain about form handling in PHP?
		UNIT-5
1		Explain about looping statements in Ruby with programs?
2		Explain about Modules in Ruby with example programs?
3		Explain about Blocks in Ruby with example programs?
4		Explain about Methods in Ruby with example programs?
5		Explain about File I/O in Ruby with example programs.

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III B.TECH I SEMESTER R20 REGULAR

QUESTION BANK

(UNITWISE, MODEL AND PREVIOUS QUESTION PAPERS)

2023-24

R20 A0512: COMPILER DESIGN

R20A0512: COMPILER DESIGN

UNITWISE QUESTIONS

S.No		UNIT-1
1		How many phases are there in a compiler? Explain each phase in detail?
2		a) Describe the role of lexical analysis in compiler design?
		b) Explain Input Buffering with simple examples?
3		Explain about Language Processor in compiler Design?
4		Explain the following terms
		A)Specification of Tokens
		B)Recognition of Tokens
5		a)Explain the Structure of Compiler?
		b) What is the need for separating lexical analysis and syntax analysis?
6		Explain LEX Tool with an Lex Programme?
7		Write short notes a. pass and phases of a compiler b. Bootstrapping
8		How to design the compiler by using the source program position:=intial+rate*60
9		Write short notes a) Application of compiler technology b) Specification of Tokens
10		a) List the various phases of a compiler. B) Differentiate tokens, patterns, and lexeme. c) Differences between compiler and Interpreter.

		d) Define Regular Expressions and Regular Grammar. e) List the various error recovery strategies for a lexical analysis.
		UNIT-2
1		.a) Construct the recursive decent parser for the following grammar? E-> E+T/T T-> T*F/F F-> (E)/id Explain about Left factoring and Left Recursion with an examples?
2		Define augmented grammar? Construct the LR(0) items for the following Grammar? S->L=R [L1, 10M] S->R L->*R L->id R->L
3		Calculate FIRST and FOLLOW for the following grammar? a) E-> E+T/T T-> T*F/F F-> (E)/id b)S->xABC A->a|bbD B->a|ε C->b| ε D->c| ε
4		Construct Predictive Parse Table for the grammar E->E+T/T,T->T*F/F,F->(E)|id and parse the string id+id*id.
5		Perform Shift Reduce Parsing forthe following i) S->(L)|a L->L,S|S input string: (a,(a,a)) . ii) E-> E+E / E*E / (E) / id input string (id*id+id)
6		Construct CLR Parsing table for the given grammar S->CC C->aC/d
7		Consider the grammar S->AB|ABad A->d E ->b D->b| ε B->c Construct the predictive parsing table. Show that the given grammar is LL(1) or not
8		8. Consider the grammar S->xABC A->a|bbD B->a|ε C->b| ε D->c| ε Construct predictive parsing table for the given grammar.
9		Perform Shift Reduce Parsing for the input string using the grammar. [L4 L->L,S|S a) (a,(a,a)) b) (a,a)
10		a) Define LL(1)? b) Differences between SLR,CLR, LALR parsers? c) Problems in Top Down Parsing?

		d) Define Handle prunig?. e) DefineAmbiguous grammar?
		UNIT-3
1		Explain syntax directed definition with simple examples?
2		Describe the evaluation order of SDT with an example.
3		Explain the Type Checking with suitable examples?
4		Explain the Translation scheme of SDD.
5		Describe the representation of 3-address code with an examples.
6		Explain in detail about Backpatching Technique?.
7		Explain the applications of Syntax Directed Definition.
9		Write down the translation procedure for control statement?
9		Explain different types of intermediate code representations?
10		a) Define a syntax-directed translation. b) Define annotated parse tree. c)What are the three functions of backpatching? d) Write the Syntax of case statement?. e) Differentiate between L attribute and S attribute.
		UNIT-4
1		Draw the format of Activation Record in stack allocation and explain each field in it.
2		Explain about Global data flow analysis.
3		Explain theStorage Organization with simple examples.
4		Define Symbol table. Explain different types of Data structure for symbol table
5		Distinguish between static scope and dynamic scope. Briefly explain access to non-local Names in static scope.
6		1. Explain the Non Block Structured Languages?
7		2. Explain Storage allocation strategies with suitable examples?
8		3. Explain heap management mechanism.
9		Explain about block structured language.
10		Define Activation Record. b) Name any four procedural optimization techniques c) Define scope and life time of variable. d) Define symbol table. e) Define data flow equation?.

		UNIT-5
1		Write about all issues in code generation. Describe it.
2		Explain the target machine architecture?
3		Explain optimization techniques on Basic Blocks with simple examples?
4		Describe the various strategies in register allocation.
5		Explain the peephole optimization Technique?.
6		Construct the DAG for following statement. a+b*c+d+b*c
7		Construct the DAG for the following basic blocks 1 t1:=4*i 2. t2:=a[t1] 3. t3:=4*i 4. t4:=b[t3] 5. t5:=t2*t4 6. t6:=prod+t5 7. prod:=t6 8. t7:=i+1 9. i:=t7 10. if i<=20 goto 1
8		Explain the simple code generator and generate target code sequence for the following statement d:=(a-b)+(a-c)+(a-c)
9		Write short notes on i)Simple code generator ii)Register allocation
10		Explain the following terms a) Role of peephole optimization in compilation process b) Issues in the design of a code generator.(any 4) c) Give the different forms in target program d) Give the applications of DAG. e) Define Dead-code elimination with example.

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III B.TECH I SEMESTER R20 REGULAR

QUESTION BANK

R20A0512: COMPILER DESIGN

PREVIOUS QUESTION PAPERS

R15

Code No: R15A0512

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B. Tech I Semester Regular/supplementary Examinations, November 2018

Complier Design

(CSE&IT)

Roll No										

Time: 3 hours **Max. Marks: 75**

Note: This question paper contains two parts A and B
Part A is compulsory which carriers 25 marks and Answer all questions.
Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

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PART-A (25 Marks)

1). a	Write the chief differences between compiler and interpreter.	**[2M]**
b	State the role and need of lexical analyzer.	**[3M]**
c	What are the problems with Top down parsing?	**[2M]**
d	List out some typical semantic errors.	**[3M]**
e	Comparison of Top down and Bottom up parsers.	**[2M]**
f	Construct the collection of LR(0) items sets for the following grammar: **S → SS | a | ε**	**[3M]**
g	List the attributes of symbol table.	**[2M]**
h	What is a three address codes? What are its types?	**[3M]**
i	What is flow graph?	**[2M]**
j	Discuss briefly about Loop optimization.	**[3M]**

PART-B (50 MARKS)

SECTION-I

2 Explain about different phases of compiler in detail with an example? **[10M]**

OR

3 a. What is LEX? Explain with an example program using LEX. **[10M]**

b. Construct a predictive parsing table for the grammar

E → E + T / T
T → T * F / F
F → a / b

SECTION-II

4 a. Construct SLR parsing table for the grammar S → CC , C → a | d. **[10M]**

b. Give the YACC programming specifications.

OR

5 What is an LALR grammar? Construct LALR parsing table for the following grammar **[10M]**

S→CC C→eC C→e/d

SECTION-III

6 a. What is Attribute Grammar? Give the syntax direct definition for a desktop calculator? **[10M]**

b. Explain about S-attribute definition.

OR

7 What is a symbol table? Mention the different approaches to organize symbol table **[10M]**

SECTION-IV

8 a. List the different storage allocation strategies in detail. **[10M]**

b. What is an Activation Record? Explain the purpose of each field of an Activation Record.

OR

9 a. Why do we need intermediate code? What are the types of intermediate code? **[10M]**

b. Explain about stack storage allocation.

SECTION-V

10 a. Explain about DAG. **[10M]**

b. Discuss various Register Allocation Strategies.

OR

11 a. Discuss briefly about different object code forms **[10M]**

b. Explain the code generation algorithm.

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R15

Code No: R15A0512

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Supplementary Examinations, July/August 2021

Compiler Design

(CSE&IT)

Roll No										

Time: 3 hours **Max. Marks: 75**

Answer Any **Five** Questions

All Questions carries equal marks.

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1 Regular expressions are important for lexical analysis? Explain the reason with examples. **[15M]**

2 Explain the various phases of a compiler in detail. Also write down the output for the following expression after each phase a: =b*cd. **[15M]**

3 Write a YACC program that will take regular expression as input and produce its parse tree as output. **[15M]**

4 Construct predictive parsing table for the following grammar **[15M]**

$S \rightarrow (L) \mid a$

$L \rightarrow L, S \mid S$

5 What is symbol table? Discuss various ways to organize a symbol table. **[15M]**

6 Describe in detail the syntax directed translation of case statements. **[15M]**

7 Discuss about the following: **[15M]**

a) Copy Propagation

b) Dead code Elimination and

c) Code motion.

8 What are the object code forms? Explain the issues in code generation **[15M]**

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R17

Code No: R17A0512

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Supplementary Examinations, July/August 2021

Compiler Design

(CSE)

Roll No										

Time: 3 hours **Max. Marks: 70**

Answer Any **Five** Questions
All Questions carries equal marks.

***

1	a)	Explain the different phases of compiler, showing the output of each phase, using the given statement position:= initial+rate*60	**[7M]**
	b)	Explain the role of a Lexical Analyzer.	**[7M]**
2	a)	Explain about Bootstrapping.	**[7M]**
	b)	Describe the data structures associated with Compiler.	**[7M]**
3	a)	What is left recursion? Eliminate left recursion from E →E + T / T T →T * F / F F → (E) / id	**[7M]**
	b)	What are the drawbacks of Recursive Descent Parsing?	**[7M]**
4	a)	Explain about LR parsers. Construct SLR parsing table for the following grammar S → AS | b A → SA | a	**[7M]**
	b)	Explain the rules for finding the FIRST set for a given grammar.	**[7M]**
5	a)	Write SDD for evaluation of an expression in desktop calculator.	**[7M]**
	b)	Write Syntax Direct Translation for converting infix expression to post fix form.	**[7M]**
6	a)	Write short notes on static and dynamic type checking	**[7M]**
	b)	Write Quadruple for x:= -a+b * -a+b	**[7M]**
7	**a)**	Explain about different Storage Allocation Strategies with examples.	**[7M]**
	b)	Define a Directed Acyclic Graph. Construct a DAG and write the sequences of instructions for the expression a+ a*(b-c) + (b-c) *d.	**[7M]**
8	**a)**	Explain the issues in Code Generation.	**[7M]**
	b)	Give the significance of Register Descriptor.	**[7M]**

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R17

Code No: R17A0512

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Supplementary Examinations, June 2022

Compiler Design

(CSE)

Roll No										

Time: 3 hours **Max. Marks: 70**

Answer Any **Five** Questions
All Questions carries equal marks.

***

1 What is the role of the lexical analyzer? Explain Compiler construction tools. **[14M]**

2 Give the parse tree for the following while statement. **[14M]**
while A>B&A<=2*B-5 do A:=A+B

3 Construct the LR Parsing table for the following grammar: **[14M]**
E →E + T | T
T→ T * F | F
F → (E)/id

4 What is FIRST and FOLLOW? Explain the steps to compute FIRST and FOLLOW with an example. **[14M]**

[14M]

5 Differentiate between S-attributed and L-attributed SDD's. Check whether the given SDD is L-Attributed or Not? Justify your answer.
A->PQ : P.in=p(A.in)
Q.in=q(P.sy)
A.sy=f(Q.sy)
A->XY: Y.in=y(A.in)
X.in=x(Y.sy)
A.sy=f(X.sy)

6 Describe in detail the syntax directed translation of case statements. **[14M]**

7 Discuss about the following: **[5M]**
a) Copy Propagation **[5M]**
b) Dead code Elimination and **[4M]**
c) Code motion.

8 Describe about principal sources of optimization. **[14M]**

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R18

Code No: R18A0512

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Supplementary Examinations, June 2022

Compiler Design

(CSE)

Roll No										

Time: 3 hours **Max. Marks: 70**

Answer Any **Five** Questions
All Questions carries equal marks.

***

1 a) Discuss the phases of a compiler indicating the inputs and outputs of each phase in translating the statement **[10M]**
"amount = principle + rate * 36.0 "

b) Specify the functionality of linker, loader, and compiler. **[4M]**

2 a) What is a compiler? List different types of Compiler **[4M]**

b) List out the functions of a Lexical Analyzer? State the reasons for the Separation of Analyses programs into Lexical, Syntax, and Semantic Analyses. **[10M]**

3 a) Show the moves of LR Parser on id*id+id input string for the following grammar? **[10M]**

E→E+T | T
T→T*F | F
F→ (E) | id

b) Explain the structure of YACC program with a suitable example. **[4M]**

4 a) What is an LALR(1) grammar?. Construct LALR parsing table for the following grammar: **[10M]**

S -> CC
C -> cC
C -> c|d

b) What is do you mean by left factoring the grammars? Explain. **[4M]**

5 a) What are different intermediate code forms? Discuss different Three Address code types and implementations of Three Address statements. **[7M]**

b) Define activation records. Explain how it is related with runtime storage allocation. **[7M]**

6 a) With a neat diagram explain the format of the Symbol Table. And **[7M]**

discuss the tree structures representation of scope information.

b) What do you mean by attributed grammars? Discuss the translation scheme for Converting an infix expression to its equivalent postfix form. **[7M]**

7 a) Explain the following code optimization techniques with examples. **[7M]**
a) Constant propagation b) Strength reduction c) Code Motion

b) Write a note on simple type checker and list the different types of type checking **[7M]**

8 a) Write an algorithm for Global Common Sub Expression Elimination. **[7M]**

b) What is an induction variable & how do you eliminate induction variables? **[7M]**

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R18

Code No: R18A0512

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Supplementary Examinations, July/August 2021

Compiler Design

(CSE)

Roll No										

Time: 3 hours **Max. Marks: 70**

Answer Any **Five** Questions
All Questions carries equal marks.

***

1	Discuss the role of grammars in Parser construction? Construct the Predictive parsing table for the grammar G : E → E+T |T , E → T*F |F , F → (E) |id.	**[14M]**
2	a. Explain about various types of translators. b. Write about functions and classification of parsers.	**[7M]** **[7M]**
3	Define Ambiguous Grammar? Check whether the following grammar is ambiguous or not. S→aAB, A→bC/cd, C→cd, B→c/d	**[14M]**
4	Construct SLR Parsing table for the grammar S→ (L)|a L→L,s|s	**[14M]**
5	Explain in brief about equivalence of type expressions.	**[14M]**
6	a. What is symbol table? Discuss various ways to organizing symbol table. b. Explain various storage allocation strategies with its merits and demerits.	**[7M]** **[7M]**
7	Illustrate loop optimization with suitable example.	**[14M]**
8	a. Explain about the issues in the design of code generator b. Discuss about machine dependent code optimization techniques	**[7M]** **[7M]**

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R20

Code No: R20A0512

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Supplementary Examinations, May/June 2023

Compiler Design

(CSE & CSE-AIML)

Roll No										

Time: 3 hours **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

***

SECTION-I

1	***A***	What are the advantages of a compiler over an interpreter?	**[7M]**
	B	Differentiate a phase and pass? Compare multi-pass and single pass compiler?	**[7M]**

OR

2	***A***	What is meaning of patterns, lexemes and tokens? Identify lexemes and tokens in the following statement: a = b*d;	**[7M]**
	B	Explain with one example how LEX program performs lexical analysis for the following patterns in `C': identifier, comments, numerical constants, arithmetic operators.	**[7M]**

SECTION-II

3	***A***	Write the procedure for Recursive descent parser with an example?	**[7M]**
	B	Construct the predictive parser for the following grammar S → iCtSS' | a S' → eS | ε C → b	**[7M]**

OR

4	***A***	Explain Shift Reduce parsers with neat block diagram?	**[7M]**
	B	Construct LR (0) items for the following grammar. E→ E+T | T T →T*F | F F → (E) | id	**[7M]**

SECTION-III

5	***A***	For the input expression (3+4)*(5+6)n construct an annotated parse tree according to Syntax Directed Definition (SDD) of desk calculator	**[7M]**
	B	What is intermediate code representation? Explain quadruples, triples and indirect triples with an example.	**[7M]**

OR

6	***A***	Consider the following grammar: D →TL T → int |float L →L, id |id Write the Syntax Directed Definitions (SDD) to add the type of each identifier to its entry in the symbol table during semantic analysis?	**[7M]**
	B	Explain the use of Symbol table in compilation process? List out various	**[7M]**

attributes stored in the symbol table?

SECTION-IV

7	***A***	Explain about Heap management.	**[7M]**
	B	Explain Machine dependent code optimization (Peephole Optimization) in detail with an example?	**[7M]**

OR

8	***A***	Explain various storage allocation strategies with an example.	**[7M]**
	B	Construct DAG for the following basic block of 3-address instructions: a := b + c x := a + b b := a - d c := b + c d := a - d y := a - d	**[7M]**

SECTION-V

9		Explain Global Data Flow analysis with necessary equations.	**[14M]**

OR

10	***A***	Explain Live Variable analysis with an example.	**[7M]**
	B	Explain different methods for register allocation and assignment	**[7M]**

***