R20

Code No: R20A0513

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Regular/Supplementary Examinations, January 2024

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***	What is agent? Explain various types of agents.	**[7M]**
	B	Discuss Hill climbing with an example. Write its limitations.	**[7M]**
		OR	
2	***A***	Differentiate between BFS and DFS algorithms.	**[7M]**
	B	Discuss A* algorithm in detail.	**[7M]**
		SECTION-II	
3		Describe an AO* algorithm and explain how it is not suitable for searching in And-OR graphs	**[14M]**
		OR	
4	***A***	Differentiate between forward and backward chaining.	**[7M]**
	B	Explain Alpha – Beta Pruning.	**[7M]**
		SECTION-III	
5	***A***	Describe Monotonic and non – monotonic reasoning in problem solving process?	**[7M]**
	B	Explain representing knowledge in an uncertain domain	**[7M]**
		OR	
6	***A***	Discuss the knowledge representation issues.	**[7M]**
	B	Discuss semantic networks.	**[7M]**
		SECTION-IV	
7	***A***	Describe and discuss in detail, the important aspects of (i) Rote Learning (ii) Learning by taking advice. Illustrate answer with the help of relevant examples.	**[7M]**
	B	Explain in brief about Decision trees in learning?	**[7M]**
		OR	
8	***A***	Discuss learning in problem solving.	**[7M]**
	B	Illustrate Winston's Learning Program.	**[7M]**
		SECTION-V	
9		Illustrate expert system and its architecture.	**[14M]**
		OR	
10	***A***	What is the significance of expert system shell.	**[7M]**
	B	Discuss about knowledge acquisition.	**[7M]**

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R20

Code No: R20A6210

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Regular/Supplementary Examinations, January 2024

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*	Explain in detail about Forensics science?	**[7M]**
	B	Explain different challenges faced by digital forensics?	**[7M]**
		OR	
2	*A*	Why do people commit computer crimes? Explain types of computer crimes.	**[7M]**
	B	Explain the methods of criminalistics tactics.	**[7M]**
		SECTION-II	
3	*A*	Define Cybercrime Scene analysis. How to Identify digital evidence? Explain in detail.	**[7M]**
	B	What are steps to understand the Rules of Evidence?	**[7M]**
		OR	
4	*A*	Explain How to Collect Evidence in Private-Sector Incident Scenes	**[7M]**
	B	Describe in detail about Processing Law Enforcement Crime Scenes.	**[7M]**
		SECTION-III	
5	*A*	How to Create and manage shared folders using operating system.	**[7M]**
	B	Define the workload of law enforcement. Explain it.	**[7M]**
		OR	
6	*A*	Discuss parts of gathering evidence.	**[7M]**
	B	How to define who should be notified of a crime.	**[7M]**
		SECTION-IV	
7	*A*	Describe procedures for corporate high-tech investigations.	**[7M]**
	B	Explain in detail about Overview of network forensics?	**[7M]**
		OR	
8	*A*	Describe Open-source security tools for network forensic analysis?	**[7M]**
	B	Illustrate Computer crime.	**[7M]**
		SECTION-V	
9	*A*	Explain the process of Mobile Device forensics.	**[7M]**
	B	Discuss a legal case study to apply some of the clauses of Indian Act 2000.	**[7M]**
		OR	
10	*A*	Discuss Impact of security features on traditional mobile forensic techniques	**[7M]**
	B	What are mobile forensics tools for investigation and analysis of data?	**[7M]**

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Code No: **R20A0512**

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Regular/Supplementary Examinations, January 2024

Compiler Design

(CSE & CSE-AIML)

R20

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		Illustrate the various phases of a compiler for compilation task.	**[14M]**
		OR	
2	***A***	Explain How Finite automata are useful in the lexical analysis?	**[7M]**
	B	List out the benefits and usage of Context free grammars in syntax specification.	**[7M]**

SECTION-II

3	***A***	Compose a predictive parser for the following grammar: E→TE' E'→+TE' | ∈ T→FT' T'→*FT' | ∈ F→(E) | id	**[7M]**
	B	Write the YACC specification of a simple desk calculator as given: E->E+T/T T->T*F /F F -> (E) | digit where digit between 0 to 9.	**[7M]**
		OR	
4	***A***	What is an LR(0) item? Construct an SLR parsing table for the grammar G: S→ L=R |R, L → *R | id, R → L. Is it SLR(1) grammar?	**[14M]**

SECTION-III

5	***A***	Criticize the syntax-Directed translation schemes.	**[7M]**
	B	Translate the expression (a+b)*(c+d)+(a+b+c) into the following: i. Quadruples ii. Triples iii. Indirect triples.	**[7M]**
		OR	
6	***A***	Generate the three address code for the following code fragment. a = b + 1 x = y + 3 y = a / b a = b + c	**[7M]**
	B	Construct a DAG for the expression: a+a*(b-c)+(b-c)*d	**[7M]**

SECTION-IV

7		Explain the concepts of Directed Acyclic Graph. Construct a DAG and write the sequence of instructions for the expression a + a * (b-c) + (b-c) * d	**[14M]**
		OR	
8		Outline the activation records. Explain how it is related with runtime storage allocation.	**[14M]**

SECTION-V

9	***A***	Why next-use information is required for generating object code? Justify your answer.	**[7M]**
	B	Write a note on machine dependent code optimization.	**[7M]**
		OR	
10	***A***	Discuss Global Register Allocation in code generation.	**[7M]**
	B	Draw the flow graph for the following code: i. location = -1 ii. i=0 iii. if i<100 goto 5 iv. goto 13 v. t1=4*i vi. t2=A[t1] vii. if t2 = x goto 9 viii. goto 10 ix. location = i x. t3 = i + 1 xi. i = t3 xii. goto 3 xiii. any other statement	**[7M]**

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R20

Code No: R20A0515

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Regular/Supplementary Examinations, January 2024

Scripting Languages

(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.

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SECTION-I

1	***A***	Discuss the characteristics that differentiate scripts from traditional programs. Provide examples to illustrate your points.	**[7M]**
	B	Explain the role of scripting languages in automating tasks. Provide three practical examples of tasks that are commonly automated using scripting languages.	**[7M]**
		OR	
2	***A***	Compare and contrast client-side scripting and server-side scripting. Illustrate with examples how each contributes to web development.	**[7M]**
	B	Compare the usage of var, let, and const in JavaScript. Provide scenarios where each should be appropriately used, and explain the implications of using each declaration type.	**[7M]**

SECTION-II

3	***A***	Explain the concept of mouse events in JavaScript. Provide examples of at least three different mouse events and describe how they can be used to enhance interactivity on a web page.	**[7M]**
	B	Discuss the role of keyboard events in JavaScript. Provide examples of handling keyboard events and explain how they can be utilized to create a better user experience.	**[7M]**
		OR	
4	***A***	Describe the significance of form events in JavaScript. Provide examples of form events and explain how they are commonly used in web forms to improve user interaction.	**[7M]**
	B	Describe the importance of form validation in web development. Provide examples of JavaScript-based form validation techniques and discuss how they contribute to enhancing the user experience on a website.	**[7M]**

SECTION-III

5	***A***	Explain the concept of scalars in PERL. Provide examples of scalar variables and describe how they are used. Discuss the significance of variable naming conventions	**[7M]**
	B	Discuss the role of arrays in PERL. Provide examples of array declaration, initialization, and manipulation. Explain how arrays contribute to efficient data handling in PERL.	**[7M]**
		OR	
6	***A***	Enumerate and explain different types of operators in PERL (arithmetic,	**[7M]**

relational, logical). Provide examples of each type and discuss their applications in programming.

	B	Discuss the various conditional statements in PERL (if, elsif, else). Provide examples of using these statements and explain how they contribute to controlling the flow of a program.	**[7M]**

SECTION-IV

7	***A***	Discuss the role of file handling in PHP. Provide examples of common file operations such as reading from and writing to files.	**[7M]**
	B	Discuss the importance of string functions in PHP. Provide examples of commonly used string functions and explain how they facilitate string manipulation	**[7M]**

OR

8	***A***	Explain the concept of functions in PHP. Provide examples of creating parameterized functions and discuss the advantages of using functions in programming.	**[7M]**
	B	Explain the difference between call by value and call by reference in PHP functions. Provide examples illustrating both concepts and discuss their implications	**[7M]**

SECTION-V

9	***A***	Compare and contrast the for and while loops in Ruby. Provide examples illustrating their usage and discuss situations where one loop type might be preferred over the other.	**[7M]**
	B	Discuss the various conditional statements in Ruby (if, elsif, else). Provide examples of using these statements and explain how they contribute to controlling the flow of a program.	**[7M]**

OR

10	***A***	Enumerate and explain different types of operators in Ruby (arithmetic, relational, logical). Provide examples of each type and discuss their applications in programming	**[7M]**
	B	Explain the various data types in Ruby. Provide examples of each data type and discuss their use cases in programming.	**[7M]**

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R20

Code No: R20A6902

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Supplementary Examinations, January 2024

Embedded Systems

(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***	Differentiate between microprocessor and microcontroller.	**[4M]**
	B	Explain the basic architecture of the 8086 microprocessor, highlighting its main functional units and their interconnections.	**[10M]**
		OR	
2	***A***	Discuss the purpose and functionality of various registers in the 8086 microprocessor, including general-purpose, segment, and index registers.	**[7M]**
	B	Explain the different addressing modes supported by the 8086 processor. Provide examples illustrating their usage.	**[7M]**
		SECTION-II	
3	***A***	Define an embedded system and explain its characteristics.	**[7M]**
	B	What are the quality attributes of an embedded system?	**[7M]**
		OR	
4	***A***	Outline the steps involved in the development of an embedded system.	**[7M]**
	B	Examine the specific application domains where embedded systems excel compared to general computing systems. Discuss instances where one type might be more advantageous over the other based on their specialization.	**[7M]**
		SECTION-III	
5	***A***	Evaluate the significance of the core components (CPU, memory, timers, and I/O) in an embedded system's architecture. How do these components interact to ensure efficient system operation and real-time responsiveness?	**[7M]**
	B	Assess the critical role of sensors and actuators in embedded systems. Discuss how the integration of diverse sensors and actuators impacts system functionality and responsiveness in different application domains.	**[7M]**
		OR	
6	***A***	Compare and contrast I2C, SPI, UART, and parallel interfaces in embedded systems. Analyze their strengths, weaknesses, and typical applications. Provide examples where each interface excels.	**[7M]**
	B	Explain USB in detail.	**[7M]**
		SECTION-IV	
7	***A***	Evaluate the advantages and limitations of the super loop-based approach versus the operating system-based approach in embedded firmware design. Discuss scenarios where each approach is most suitable, considering factors like system complexity, real-time requirements, and resource utilization.	**[7M]**
	B	Critically analyze the super loop-based design approach in embedded	**[7M]**

firmware development. Discuss the challenges associated with this method and strategies to mitigate those challenges in real-world applications.

OR

8	***A***	Compare and contrast the operating system-based approach with the super loop-based approach in embedded firmware design. Evaluate the impact of using an operating system on system scalability, responsiveness, and complexity.	**[7M]**
	B	Assess the advantages and disadvantages of using assembly language-based development in embedded firmware compared to high-level language-based development. Discuss the trade-offs in terms of development time, code efficiency, and portability.	**[7M]**

SECTION-V

9	***A***	Analyze the significance of choosing appropriate data types and constants in C programming for embedded systems. Discuss the impact of data type selection on memory utilization and system performance, highlighting practical examples.	**[7M]**
	B	Evaluate the role of operators and expressions in embedded C programming. Illustrate their usage in optimizing code for embedded systems, considering factors like code readability, efficiency, and maintenance.	**[7M]**

OR

10	***A***	Critically evaluate the efficiency of control flow statements (if-else, switch-case, loops) in embedded C programming, emphasizing their impact on program execution time and code size. Provide examples demonstrating their effective utilization in embedded applications.	**[7M]**
	B	Discuss the importance of functions and arrays in embedded C programming. Evaluate their role in code modularity, reusability, and memory management, specifically in the context of programming for 8051 microcontrollers.	**[7M]**

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R20

Code No: R20A0452

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Regular/Supplementary Examinations, January 2024

Internet of Things & Its Applications

(ME, CSE, IT, CSE-CS, CSE-AIML, CSE-DS, B.Tech-AIDS & B.Tech-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.

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SECTION-I

1	***A***	What are "Things" in Internet of Things technology? Explain three – layer architecture of IoT technology in detail with the help of a diagram	**[7M]**
	B	Explain the classification of smart objects in IoT technology.	**[7M]**
		OR	
2		Explain in detail simplified IoT architecture.	**[14M]**
		SECTION-II	
3	***A***	What is LoRaWAN? Explain the three classes of LoRaWAN devices	**[7M]**
	B	What do you mean by topology? Explain different types of topologies used in 802.15.4 standard.	**[7M]**
		OR	
4	***A***	Explain IEEE 802.11 ah with respect to IoT.	**[7M]**
	B	Explain in detail MQTT protocol.	**[7M]**
		SECTION-III	
5	***A***	Mention the application areas where a System on Chip (SoC) is used in IoT.	**[7M]**
	B	With the help of a diagram explain building blocks of IoT technology.	**[7M]**
		OR	
6	***A***	What are the different criteria of IoT supported platforms which are considered to select a particular platform for an IoT application.	**[7M]**
	B	How will you use an Arduino board and Arduino IDE software to build an IoT application? Explain your approach step by step.	**[7M]**
		SECTION-IV	
7	***A***	Explain the data acquisition and data validation in IoT.	**[7M]**
	B	Explain the different ways of storing IoT data	**[7M]**
		OR	
8	***A***	Discuss the advantages of using Cloud Computing Platform for IoT systems.	**[7M]**
	B	Discuss the different cloud deployment models used in IoT technology.	**[7M]**
		SECTION-V	
9	***A***	What is Industry 4.0 Concepts? Explain in detail.	**[7M]**
	B	How will you implement IoT technology in some industry? Discuss with one example of your choice.	**[7M]**
		OR	
10	***A***	Propose a design approach to your city a secured one using IoT technology.	**[7M]**
	B	Mention the benefits received by industries by implementing Industry 4.0 Concepts	**[7M]**

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R20

Code No: R20A0511

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Regular/Supplementary Examinations, January 2024

Software Engineering

(CSE, IT, CSE-CS, CSE-AIML, CSE-IOT & B.Tech-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.

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SECTION-I

1	***A***	Write a detailed note on Waterfall model.	**[7M]**
	B	Explain about changing nature of software and software myths.	**[7M]**
		OR	
2	***A***	Discuss about the Capability Maturity Model Integration (CMMI).	**[7M]**
	B	What is the Unified process and explain it.	**[7M]**
		SECTION-II	
3	***A***	Differentiate between functional and non-functional requirements.	**[7M]**
	B	Describe about context models, behavioural models and Data models.	**[7M]**
		OR	
4	***A***	What is the importance of UML Diagrams with example	**[7M]**
	B	Explain about requirements elicitation and analysis in software engineering?	**[7M]**
		SECTION-III	
5	***A***	Explain about software architecture and data design.	**[7M]**
	B	Analyse about interface design steps and design evaluation.	**[7M]**
		OR	
6	***A***	Explain various Design concepts in details	**[7M]**
	B	Illustrate about architectural styles, patterns and architectural design.	**[7M]**
		SECTION-IV	
7	***A***	Explain about the art of Debugging and Risk projection.	**[7M]**
	B	Describe about Risk refinement RMMM and RMMM Plan	**[7M]**
		OR	
8	***A***	Compare Black-Box and White-Box testing with example.	**[7M]**
	B	Write a short note on Validation testing and System testing,	**[7M]**
		SECTION-V	
9	***A***	Describe about software quality assurance and software reviews.	**[7M]**
	B	Explain about the ISO 9000quality standards.	**[7M]**
		OR	
10	***A***	Explain about the Case Study of ATM Management System.	**[7M]**
	B	Write about Statistical Software quality Assurance with example.	**[7M]**

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