R20

Code No: R20A0511

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Supplementary Examinations, June/July- 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***	What is the difference between Incremental process models, and Evolutionary process models.	**[7M]**
	B	Explain about process frame work with a neat sketch.	**[7M]**
		OR	
2	***A***	What is the Capability Maturity Model Integration (CMMI)?	**[7M]**
	B	Discuss about the Unified process and explain it.	**[7M]**
		SECTION-II	
3	***A***	Explain about context models, behavioural models and Data models.	**[7M]**
	B	What is the importance of UML Diagrams with example	**[7M]**
		OR	
4	***A***	Describe about requirements elicitation and analysis in software engineering?	**[7M]**
	B	Compare functional and non-functional requirements	**[7M]**
		SECTION-III	
5	***A***	Discuss about architectural styles, patterns and architectural design.	**[7M]**
	B	Illustrate about user interface analysis and design.	**[7M]**
		OR	
6	***A***	Explain about interface design steps and design evaluation.	**[7M]**
	B	Analyse about software architecture and data design.	**[7M]**
		SECTION-IV	
7	***A***	Explain about the strategic approach to software testing.	**[7M]**
	B	Compare Black-Box and White-Box testing with example.	**[7M]**
		OR	
8	***A***	Describe about Risk refinement RMMM and RMMM Plan.	**[7M]**
	B	Discuss about Validation testing and System testing,	**[7M]**
		SECTION-V	
9	***A***	Write about Statistical Software quality Assurance with example.	**[7M]**
	B	Briefly discuss about the Case Study of ATM Management System	**[7M]**
		OR	
10	***A***	Describe about the ISO 9000quality standards.	**[7M]**
	B	Describe about software quality assurance and software reviews.	**[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, June/July 2024

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.

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SECTION-I

1		Recognise the functions of a Lexical Analyzer. State the reasons for the Separation of Analyses programs into Lexical, Syntax, and Semantic Analyses.	**[14M]**
		OR	
2	***A***	Classify the parser into various types.	**[7M]**
	B	How do you organize NFA from Regular expression?	**[7M]**

SECTION-II

3	***A***	Discover the rule to eliminate left recursion in a grammar. Prepare and eliminate the left recursion for the grammar. S → Aa | b A →Ac | Sd |ε	**[7M]**
	B	Identify the advantages and disadvantages of LR Parser.	**[7M]**
		OR	
4	***A***	Construct the predictive parsing table for the following grammar and verify the string (a, a) is accepting or not. S→(L) | a L→L, S | S	**[9M]**
	B	Check whether the following grammar is a LL(1) grammar S -> iEtS | iEtSeS | a E -> b Also define the FIRST and FOLLOW procedures.	**[5M]**

SECTION-III

5	***A***	Write syntax directed definition for simple desk calculator. Using this definition draw annotated parse tree for 3*5+4n.	**[7M]**
	B	Explain the unification algorithm by us type checking concepts	**[7M]**
		OR	
6	A	Explain the use of symbol table in compilation process. List out the various attributes for implementing the symbol table	**[7M]**
	B	Generate code for the following: i) x=f(a)+f(a)+f(a) ii) x=f(f(a))	**[7M]**

SECTION-IV

7		Discuss about the followings: i) Copy propagation ii) Dead code Elimination iii) Code motion.	**[14M]**

OR

8 ***A*** Consider the following loop, generate three address code and draw the flow graph **[7M]**

```
Begin
    Prod=0
    i=1
    do
      Begin
        Prod=Prod+a[i]*b[i]
         i=i+1
       End
    While (i≤20)
End
```

B Relate the static and dynamic storage allocation for any program segment **[7M]**

SECTION-V

9 ***A*** Explain in detail about global common sub expression elimination technique. **[7M]**

B Define dataflow analysis? List out the procedures to analyse the data flow of structured programs? **[7M]**

OR

10 Write the next-use information for each line of the following 3 address code basic block. **[14M]**

a:=b+c x:=a+b b:=a-d c:=b+c d=a-d y=a-d

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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 Supplementary Examinations, June/July 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***	Define a JavaScript function that accepts parameters and returns a value. Illustrate its use with an example and discuss the importance of functions in modular programming.	**[7M]**
	B	Write and explain a JavaScript if-else statement. Provide an example demonstrating the use of multiple conditions within a single statement.	**[7M]**
		OR	
2	***A***	Explain the concept of objects in JavaScript. Provide examples of how objects are created and used, and discuss the advantages of using objects in programming.	**[7M]**
	B	Explore the various types of operators in JavaScript (arithmetic, comparison, logical). Provide examples for each type and discuss their applications.	**[7M]**

SECTION-II

3	***A***	Explain the purpose of window events in JavaScript. Provide examples of window events and discuss how they can be applied to create dynamic and responsive web pages.	**[7M]**
	B	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]**
		OR	
4	***A***	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]**
	B	Discuss the Form object in JavaScript. Explain how the Form object can be used to access and manipulate form elements. Provide examples of common operations performed using the Form object.	**[7M]**

SECTION-III

5	***A***	Discuss the importance of built-in functions in PERL. Provide examples of commonly used functions and explain how they simplify tasks such as input/output, string manipulation, and data processing	**[7M]**
	B	Discuss the significance of regular expressions in PERL. Provide examples of pattern matching using regular expressions and explain how they contribute to effective string processing.	**[7M]**
		OR	
6	***A***	Explain how strings are handled in PERL. Provide examples of string manipulation, concatenation, and interpolation. Discuss the importance of	**[7M]**

handling text data effectively.

	B	Discuss the concept of lists in PERL. Provide examples of list operations and explain how lists differ from arrays. Discuss situations where using lists is advantageous.	**[7M]**

SECTION-IV

7	***A***	Differentiate between indexed and associative arrays in PHP. Provide examples of each type and explain when to use one over the other.	**[7M]**
	B	Explain the concept of scalars in PHP. Provide examples of scalar variables and discuss the importance of variable naming conventions	**[7M]**
		OR	
8	***A***	Enumerate and explain different types of operators in PHP (arithmetic, relational, logical). Provide examples of each type and discuss their applications in programming	**[7M]**
	B	Discuss the various conditional statements in PHP (if, else if, else). Provide examples of using these statements and explain how they contribute to controlling the flow of a program.	**[7M]**

SECTION-V

9	***A***	Explain the purpose of modules in Ruby. Provide examples of creating and using modules and discuss how they facilitate code organization and reuse.	**[7M]**
	B	Discuss the concept of arrays in Ruby. Provide examples of array operations and discuss their importance in managing collections of data	**[7M]**
		OR	
10	***A***	Discuss the role of blocks in Ruby. Provide examples of using blocks and explain how they enhance code readability and maintainability.	**[7M]**
	B	Explain the concept of methods in Ruby. Provide examples of creating methods with and without parameters and discuss the advantages of using methods 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, June/July 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***	Describe the key features and functionalities of the 8051 microcontroller.	**[7M]**
	B	Explain the architecture of the 8051 microcontroller, highlighting its major components and their interconnections.	**[7M]**
		OR	
2	***A***	Illustrate the pin diagram of the 8086 microcontroller. Explain the functions of different pins and their roles in facilitating communication with external devices or components.	**[7M]**
	B	Evaluate the instruction set architecture (ISA) of the 8086 microcontroller. Discuss the types of instructions available and their significance in executing various operations within embedded systems.	**[7M]**
		SECTION-II	
3	***A***	Describe the fundamental characteristics of embedded systems. How do these systems differ from general-purpose computing systems in terms of size, complexity, and functionality?	**[7M]**
	B	Explain the significance of real-time operation as a characteristic of embedded systems.	**[7M]**
		OR	
4	***A***	Discuss the resource constraints commonly encountered in embedded systems.	**[7M]**
	B	Identify and explain key quality attributes (e.g., performance, usability, maintainability) relevant to embedded systems.	**[7M]**
		SECTION-III	
5	***A***	Assess the challenges associated with integrating multiple communication interfaces into an embedded system. How do designers ensure compatibility and interoperability between different interfaces?	**[7M]**
	B	Evaluate the importance of security and reliability in communication interfaces of embedded systems. Discuss the measures taken to ensure data integrity, confidentiality, and robustness	**[7M]**
		OR	
6	***A***	Analyze the evolving landscape of communication interfaces in embedded systems. Explain about SPI interface.	**[7M]**
	B	Explain the role of GPRS in embedded systems. How does GPRS enable connectivity and data transmission in remote embedded devices?	**[7M]**

SECTION-IV

7	***A***	Analyze the role and relevance of assembly language in embedded firmware development.	**[7M]**
	B	Discuss scenarios where using assembly language is crucial and where it might be less advantageous compared to high-level languages.	**[7M]**

OR

8	***A***	Evaluate the benefits of high-level language-based development in embedded firmware design.	**[7M]**
	B	Predict the future trends in embedded firmware design approaches and development languages. Discuss potential advancements and adaptations that might influence the choice of design methodologies and programming languages in the coming years.	**[7M]**

SECTION-V

9	***A***	Explain the process of interfacing LED, LCD, switches, and sensors using C programming. Discuss the specific challenges and considerations when implementing these interfaces in embedded systems, highlighting best practices.	**[7M]**
	B	Assess the optimization strategies available in C programming for efficient interfacing with 8051 microcontrollers. Discuss how to optimize code for better resource utilization and real-time performance when interfacing with different components.	**[7M]**

OR

10	***A***	Evaluate the importance of error handling mechanisms in C programming for interfacing with external components in embedded systems.	**[7M]**
	B	Discuss strategies to ensure robustness and reliability in the interfacing code, especially concerning error detection and recovery.	**[7M]**

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Code No: **R20A0452** **R20**

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Supplementary Examinations, June/July 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***	Discuss the significance of Internet of Things technology with different application areas' aspects	**[7M]**
	B	Explain with the help of a diagram IoT World Forum standardized architecture.	**[7M]**
		OR	
2	***A***	Explain moderately the major use cases of M2M communication.	**[7M]**
	B	Explain with the help of a block diagram an IoT ecosystem	**[7M]**

SECTION-II

3	***A***	Discuss the detail about the 6 LoWPAN and SCADA.	**[7M]**
	B	Explain the Physical and Mac layer of 802.15.4 standard.	**[7M]**
		OR	
4	***A***	Using which technique security is achieved in 802.15.4? Explain.	**[7M]**
	B	Explain Constraint Application Protocol (CoAP) in detail.	**[7M]**

SECTION-III

5	***A***	Explain in detail embedded system hardware architecture while discussing its components separately.	**[7M]**
	B	Discuss the advantages of SoC over a microcontroller.	**[7M]**
		OR	
6	***A***	Explain the significances of the following in IoT technology i) Sensors ii) Actuators iii) Processors iv) Gateways	**[7M]**
	B	Discuss in detail the IoT Architecture layers (hint: four layers)	**[7M]**

SECTION-IV

7	***A***	Compare and contrast structured data and unstructured data in detail.	**[7M]**
	B	Compare and contrast data in motion and data at rest in detail.	**[7M]**
		OR	
8	***A***	Explain different approaches of data analysis	**[7M]**
	B	"IoT data is volatile" what do you mean by this? And how will you handle the volatility of the IoT data?	**[7M]**

SECTION-V

9	***A***	Give a list of components used to health care facility a smart one. Interpret the purpose of your selection for each of the components.	**[7M]**
	B	Present your design procedure for making a health care facility a smart health care facility using IoT technology.	**[7M]**
		OR	
10	***A***	What different components will you use to make agriculture to be supported by IoT technology? Give reason for each of your selection.	**[7M]**
	B	Discuss the challenges faced by IoT technology to be used for industry applications	**[7M]**

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R20

Code No: R20A0513

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Supplementary Examinations, June/July 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***	Explain how the components of agent programs work.	**[7M]**
	B	Explain Best First Search with an example.	**[7M]**
		OR	
2	***A***	Discuss simple reflex agents and model based reflex agents.	**[7M]**
	B	Define constraint satisfaction problem and Illustrate with an example.	**[7M]**
		SECTION-II	
3	***A***	Discuss with examples the scope of and limitations of knowledge representation using propositional logic.	**[7M]**
	B	Discuss Baye's rule and its use.	**[7M]**
		OR	
4	***A***	Illustrate resolution algorithm for propositional logic.	**[7M]**
	B	Demonstrate minimax algorithm.	**[7M]**
		SECTION-III	
5	***A***	Describe monotonic and non- monotonic reasoning with suitable examples.	**[7M]**
	B	Discuss the Bayesian Belief networks with an example.	**[7M]**
		OR	
6	***A***	Discuss Inference by enumeration.	**[7M]**
	B	Define certainty factor. What are the components of certainty factor?	**[7M]**
		SECTION-IV	
7		Explain the importance of repeated problem solving for an effective improvement in the process of ``Learning". Distinguish it from Learning by taking advice.	**[14M]**
		OR	
8	***A***	Define and explain "learning". Describe in detail, the range of activities covered by the concept "learning". Justify the statement-that "learning is the most important characteristic of intelligence".	**[7M]**
	B	Discuss how do we broaden the applicability of decision trees.	**[7M]**
		SECTION-V	
9	***A***	Explain the general characteristics of an expert system.	**[7M]**
	B	Write the differences between an expert system and conventional system.	**[7M]**
		OR	
10	***A***	Explain hierarchy of expert system development process.	**[7M]**
	B	Write short notes on the following: - a) Inference Engine b) Expert System for Text Animation (ESTA) c) Dynamism of the application environment for expert systems	**[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 Supplementary Examinations, June/July 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*	What Tools can help to Digital Forensic Examiners?	**[7M]**
	B	Explain the legal considerations of Digital Forensics?	**[7M]**
		OR	
2	*A*	Explain different challenges faced by f Digital Forensics?	**[4M]**
	B	Define and discuss Criminalistics.	**[10M]**
		SECTION-II	
3	*A*	Explain in detail about Preparing for a Search.	**[7M]**
	B	What are steps to Seize Digital Evidence at the Scene?	**[7M]**
		OR	
4	*A*	How to Secure a Computer Incident or Crime Scene.	**[7M]**
	B	Explain the Processing and Handling Digital Evidence.	**[7M]**
		SECTION-III	
5	*A*	Define the workload of law enforcement. Explain law enforcement agencies.	**[7M]**
	B	List out the Types of Evidence and explain them.	**[7M]**
		OR	
6	*A*	How to Create and manage shared folders using operating system.	**[7M]**
	B	Explain the procedure of gathering evidence.	**[7M]**
		SECTION-IV	
7	*A*	Elaborate Attorney-Client Privilege Investigations.	**[7M]**
	B	Explain the concept of Employee Termination Cases with different examples	**[7M]**
		OR	
8	*A*	Give an overview of network forensics.	**[7M]**
	B	Explain how to analyse digital evidence.	**[7M]**
		SECTION-V	
9	*A*	Explain IT Act 2000.	**[7M]**
	B	What are the legal aspects of digital forensics.	**[7M]**
		OR	
10	*A*	Draw and explain new mobile forensic data extraction model.	**[7M]**
	B	Explain about mobile forensic tools in detail.	**[7M]**

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