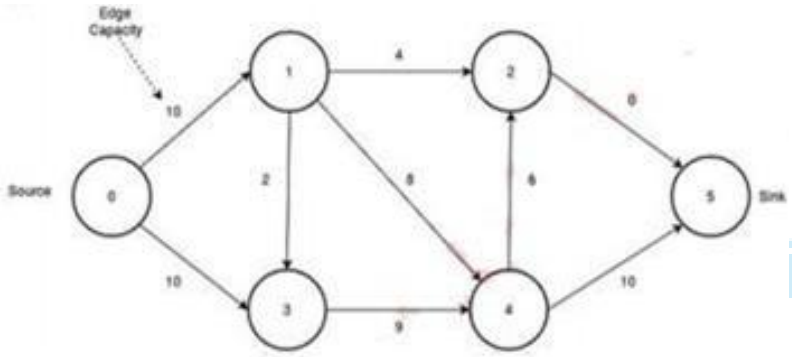
		Course Code: D2514001			
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R25**
		I M.Tech. I Semester MODEL QUESTION PAPER			
		ADVANCED ALGORITHMS ANALYSIS			
		INFORMATION TECHNOLOGY			
Time: 3 Hrs.					**Max. Marks: 60 M**
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	KL	M
		UNIT-1			
1.	**a).**	Apply Quick sort algorithm in the following data and comment on complexity 40, 10, 15, 20, 35, 45, 25, 15, 45, 10	1	3	6
	b).	Analyze the performance of a Binary search and linear search algorithms. Compute complexity of binary search and linear search	1	4	6
		OR			
2.	**a).**	Evaluate the maximum flow for the following graph 	1	4	6
	b).	Apply BFS Algorithm for the following values Given graph with 5 nodes and 3 edges, [1,2], [1,3], [3,4]	1	4	6
		UNIT-2			
3.	**a).**	Apply the greedy algorithm to a weighted activity selection problem and explain step-by-step.	2	4	6
	b).	Classify greedy method by taking suitable example of actively selection problem	2	3	6
		OR			
4.	**a).**	Classify characterization of maximum matching by augmenting paths	2	3	6
	b).	Apply Dijkstra's algorithm for single source shortest paths. How can it be used for solving all pairs shortest paths problem?	2	4	6
		UNIT-3			
5.	**a).**	Analyze the maximum flow using Ford Flukerson Algorithm	3	4	6

	b).	Solve Edmond-Karp maximum-flow algorithm with example	3	3	6
		OR			
6.	**a).**	Apply divide and conquer method to solve maximum sub array problem	3	3	6
	b).	Analyze max flow-mincut theorem with an example	3	4	6
		UNIT-4			
7.	**a).**	Apply Chinese remainder theorem, to the following equations: a = 2 (mod 5) b = 3 (mod 13) Generate solutions in the form of table	4	3	6
	b).	Distinguish polynomial multiplication and division	4	4	6
		OR			
8.	**a).**	Identify Conversions between base-representation and modulo-representation	4	3	6
	b).	Evaluate Fast Fourier Transform algorithm with an eaxmple	4	5	6
		UNIT-5			
9.	**a).**	Prove that clique problem is NP-complete	5	4	6
	b).	Prove Travelling Salesman Problem as NP complete	5	4	6
		OR			
10.	**a).**	Prove that feedback edge set problem in NP-complete	5	4	6
	b).	Compare polynomial multiplication and division	5	4	6

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE: Questions can be given as **A,B splits** or as a **Single Question** for 12 marks

		Course Code: D2514002			
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R25**
		I M.Tech. I Semester MODEL QUESTION PAPER			
		ADVANCED OBJECT ORIENTED SOFTWARE ENGINEERING			
		INFORMATION TECHNOLOGY			
Time: 3 Hrs.					**Max. Marks: 60 M**
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	KL	M
		UNIT-1			
1.	**a).**	Explain Object-Oriented Programming (OOP) concepts in detail?	1	2	8
	b).	Define software engineering and explain the need of the Software Engineering?	1	2	4
		OR			
2.	**a).**	Write about the basic building blocks of Unified Modelling Language (UML).	1	4	6
	b).	Explain the software development life cycle (SDLC) with neat diagram	1	4	6
		UNIT-2			
3.	**a).**	Analyse the Requirements analysis and specification techniques and draw a Use Case diagram for ATM System.	2	3	12
		OR			
4.	**a).**	Explain about Bridge & Strategy Design Patterns.	2	2	6
	b).	Apply UML modeling techniques to draw a Class diagram	2	3	6
		UNIT-3			
5.	**a).**	Categorize the Design Principles to build good System Design?	3	3	12
		OR			
6.	**a).**	Identify faults in an individual component. Test and validate the requirements using Path Testing with an example?	3	3	6
	b).	Analyse Test-driven development (TDD)	3	2	6
		UNIT-4			
7.	**a).**	Elaborate Software maintenance basics.	4	2	6
	b).	Analyse the refactoring techniques with an example.	4	3	6
		OR			
8.	**a).**	Distinguish and differentiate between Code review and inspection	4	3	6
	b).	Write about Software evolution and reengineering	4	5	6

		UNIT-5			
9.	**a).**	Explain the following 1. Model-driven engineering (MDE) 2. Aspect-oriented programming (AOP) 3. Component based software engineering (CBSE)	5	2	12
		OR			
10.	**a).**	Analyse the Agile software development and Scrum methodologies.	5	3	12

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE: Questions can be given as **A,B splits** or as a **Single Question** for 12 marks

				Course Code: D2514003	
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R25**
		I M.Tech. I Semester MODEL QUESTION PAPER			
		ARTIFICIAL INTELLIGENCE			
		INFORMATION TECHNOLOGY			
Time: 3 Hrs.				**Max. Marks: 60 M**	
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	KL	M
		UNIT-1			
1.	**a).**	Explain the foundations of Artificial Intelligence and discuss how they influence modern AI systems.	1	2	6
	b).	Apply the principles of Constraint Satisfaction Problems (CSP) to solve the equation BASE+BALL=GAMES. Demonstrate the steps involved in finding the solution	1	3	6
		OR			
2.	**a).**	Explain the tic-tac-toe game playing approaches in AI, including representation and decision-making	1	3	6
	b).	Compare exhaustive search techniques with heuristic search methods, highlighting their advantages and limitations	1	3	6
		UNIT-2			
3.	**a).**	Prove the following theorem using deductive inference rules From A → B ∧ C, A infer C, from A ∧ B, A → C infer C.	2	3	6
	b).	Describe the mini max algorithm with an example	2	3	6
		OR			
4.	**a).**	Consider the following problem. • John likes all kinds of food. • Apples are food. • Chicken is food. • Anything any one eats and isn't killed by is food. • Bill ate peanuts and still alive. • Sue eats everything Bill eats. i) Convert the formulas into clause form. ii) Prove that "John likes peanuts" using resolution	2	3	12
		UNIT-3			
5.	**a).**	Develop a frame based system for university application?	3	3	6
	b).	Draw a script for writing an exam in exam hall	3	2	6
		OR			

6.	**a).**	Describe your chair using a semantic net?	3	2	6
	b).	Write about Conceptual Dependency theory. How it will be used for Knowledge Representation?	3	2	6
		UNIT-4			
7.	**a).**	Explain Dempster Shafer theory for the given example In diagnosis problem might consist of set { allergy,Flu, Cold, Pneu}: M1 is { allergy , Flu, Cold, Pneu}=0.6 {Θ } = 0.4 M2 is { allergy ,Flu ,Cold}=0.8 { Θ} = 0.2,,Compute M3 belief Function	4	3	12
		OR			
8.	**a).**	Discuss about probability theory, Bayesian belief networks using examples	4	3	12
		UNIT-5			
9.	**a).**	What is fuzzy set ?Explain the operations with example?	5	3	6
	b).	Illustrate the multi valued logic, fuzzy logic, linguistic variables and hedges	5	3	6
		OR			
10.	**a).**	Discuss about various fuzzy distribution functions with neat diagrams	5	3	6
	b).	Explain about inference rules for fuzzy proposition	5	3	6

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE: Questions can be given as **A,B splits** or as a **Single Question** for 12 marks

					Course Code: D25140A0
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R25**
		I M.Tech. I Semester MODEL QUESTION PAPER			
		SECURE CODING			
		INFORMATION TECHNOLOGY			
Time: 3 Hrs.					**Max. Marks: 60 M**
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks.			
		Assume suitable data if necessary.			
			CO	KL	M
		UNIT-1			
1.	**a).**	Differentiate between proactive and reactive approaches to security. Give examples.	1	2	6
	b).	How does user trust relate to the need for secure systems	1	2	6
		OR			
2.	**a).**	List and briefly explain at least five key security principles that should guide system design.	1	2	6
	b).	Explain threat modelling, and why is it important in secure system development .	1	2	6
		UNIT-2			
3.	**a).**	Explain the difference between a null-terminated string and a length-prefixed string .	2	2	6
	b).	Describe how an attacker can exploit a string vulnerability to execute arbitrary code.	2	2	6
		OR			
4.	**a).**	Explain the concept of a buffer overflow with an example.	2	2	6
	b).	How does pointer dereferencing cause segmentation faults?	2	2	6
		UNIT-3			
5.	**a).**	List and explain three common programming errors related to dynamic memory in C++ .	3	2	6
	b).	Why is integer security still a concern in both C++ and Java?	3	2	6
		OR			
6.	**a).**	Discuss the role of Garbage Collection in Java and its security implication .	3	2	6
	b).	Describe how use-after-free vulnerabilities occur	3	2	6
		UNIT-4			
7.	**a).**	Explain ORM (Object-Relational Mapping) tools help in building	4	2	6

		secure queries?			
	b).	Differentiate between server-side filtering and client-side filtering for preventing XSS.	4	2	6
		OR			
8.	**a).**	Explain impact of XSS attacks on confidentiality, integrity, and availability?	4	2	6
	b).	Apply malicious JavaScript be injected through user input?	4	3	6
		UNIT-5			
9.	**a).**	Apply the SQUARE process model to identify and prioritize three key security requirements.	5	3	12
		OR			
10.	**a).**	Explain the role of architecture and design principles.	5	2	6
	b).	Describe the role of threat modelling in requirements engineering	5	2	6

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE: Questions can be given as **A,B splits** or as a **Single Question** for 12 marks

				Course Code: D25140A1	
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					**R25**
I M.Tech. I Semester MODEL QUESTION PAPER					
CRYPTOGRAPHY & NETWORK SECURITY					
INFORMATION TECHNOLOGY					
Time: 3 Hrs.				**Max. Marks: 60 M**	
Answer **ONE Question** from **EACH UNIT**					
All questions carry equal marks					
Assume suitable data if necessary					
			CO	KL	M
		UNIT-1			
1.	**a).**	Explain different principles of securities.	1	2	6
	b).	How can you categorise different types of security attacks?	1	2	6
		OR			
2.	**a).**	Define encryption and decryption? Explain various substitution techniques.	1	2	6
	b).	How the Hill cipher technique can be used for encryption and decryption. Justify with your example.	1	3	6
		UNIT-2			
3.	**a).**	State and explain the Chinese Remainder Theorem with an example.	2	2	6
	b).	Describe the basic idea of integer factorisation and why it is important in cryptography.	2	2	6
		OR			
4.	**a).**	Define Euler's phi (φ) function. Calculate φ(45).	2	3	6
	b).	Define and provide examples of the following algebraic structures used in symmetric cryptography: i. Group ii. Ring iii. Field	2	3	6
		UNIT-3			
5.	**a).**	What are Block Ciphers? Justify the crux of DES algorithm.	3	2	6
	b).	P=7, Q=11, e=7 amd message M= 9. Use RSA algorithm to calculate Private key D and perform encryption and decryption on given message M.	3	3	6
		OR			
6.	**a).**	In RSA, it is given that N=187, e=17, and find the private key D.	3	3	6
	b).	Explain the process of Elliptic Curve Cryptography	3	2	6
		UNIT-4			
7.	**a).**	Define Hash? Explain the process of the MD5 algorithm.	4	2	6
	b).	Explain the properties of a message digest should have in detail.	4	2	6

		OR			
8.	**a).**	Explain the Elgamal Digital Signature Scheme?	4	2	6
	b).	What is HMAC? Explain in detail regarding HMAC.	4	2	6
		UNIT-5			
9.	**a).**	Explain IPSEC with detailed headers.	5	2	6
	b).	Explain HTTPS.	5	2	6
		OR			
10.	**a).**	Explain S/MIME.	5	2	6
	b).	Explain PGP	5	2	6

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE: Questions can be given as **A,B splits** or as a **Single Question** for 12 marks

				Course Code: D25140A2	
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R25**
		I M.Tech. I Semester MODEL QUESTION PAPER			
		HIGH PERFORMANCE COMPUTING			
		INFORMATION TECHNOLOGY			
Time: 3 Hrs.				**Max. Marks: 60 M**	
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks.			
		Assume suitable data if necessary.			
			CO	KL	M
		UNIT-1			
1.	**a).**	Explain the concept of Motivating Parallelism in computing. How does it address the limitations of sequential processing?	1	2	6
	b).	Discuss the Scope of Parallel Computing in modern applications such as artificial intelligence, scientific simulations, and big data.	1	2	6
		OR			
2.	**a).**	Describe the Communication Costs in Parallel Machines. How do they influence scalability?	1	2	6
	b).	Explain the Scalable Design Principles used in developing parallel computing architectures.	1	2	6
		UNIT-2			
3.	**a).**	Illustrate the Principles of Parallel Algorithm Design. Explain the importance of preliminaries in structuring efficient algorithms.	2	2	6
	b).	Compare different Decomposition Techniques used in parallel programming with suitable examples.	2	2	6
		OR			
4.	**a).**	Discuss the Characteristics of Tasks and Interactions in parallel algorithms. Why are these critical for performance?	2	2	6
	b).	Illustrate the Methods for Containing Interaction Overheads in parallel computing. Provide examples of practical approaches.	2	2	6
		UNIT-3			
5.	**a).**	Illustrate the advantages and limitations of advanced communication operations like All-Reduce, Prefix-Sum, Scatter, and Gather with examples.	3	2	6
	b).	Discuss the role of Personalized Communication (All-to-All Personalized and Circular Shift) in parallel systems. How do these improve efficiency in distributed platforms?	3	2	6
		OR			
6.	**a).**	Explain the basics of Thread Programming in shared address space platforms. Why is synchronization necessary?	3	2	6

	b).	Illustrate the use of OpenMP programming for parallelizing computational tasks with a suitable example.	3	2	6
		UNIT-4			
7.	**a).**	Explain the effect of Granularity on Performance in parallel systems. Illustrate with a suitable example.	4	2	6
	b).	Compare various tools and platforms used for analysing social media actions	4	2	6
		OR			
8.	**a).**	Discuss the concepts of Minimum Execution Time and Minimum Cost in parallel algorithms. How do they contribute to achieving Optimal Execution Time?	4	2	6
	b).	Compare the use of Matrix–Vector Multiplication and Matrix–Matrix Multiplication as examples of dense matrix algorithms in parallel computing	4	3	6
		UNIT-5			
9.	**a).**	. Discuss the issues in sorting on parallel computers. How do approaches like Bubble Sort and its variants differ in efficiency compared to Parallelizing Quick Sort?	5	3	6
	b).	Compare the All-Pairs Shortest Path algorithm with algorithms for sparse graphs. How do parallel techniques like Parallel Depth-First Search and Parallel Best-First Search improve graph processing?	5	2	6
		OR			
10.	**a).**	Explain the CUDA Architecture and its role in parallel programming. How does using CUDA enhance performance for computationally intensive tasks?	5	2	6
	b).	Illustrate the process of writing and launching CUDA C kernels. Compare techniques for GPU memory management and synchronization in parallel programs.	5	2	6

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE: Questions can be given as **A,B splits** or as a **Single Question** for 12 marks

		Course Code: D25140A3			
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R25**
		I M.Tech. I Semester MODEL QUESTION PAPER			
		COMPUTER VISION			
		INFORMATION TECHNOLOGY			
Time: 3 Hrs.					**Max. Marks: 60 M**
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	KL	M
		UNIT-1			
1.	**a).**	Describe the concepts of "Light in Space" and "Light Surfaces" in radiometry with suitable examples.	1	2	6
	b).	Interpret the concept of photometric stereo and its applications in 3D reconstruction	1	2	6
		OR			
2.	**a).**	Differentiate between local shading models and global shading models with examples.	1	2	6
	b).	Explain how color can be represented in digital images and give examples of color models.	1	3	6
		UNIT-2			
3.	**a).**	Describe shift-invariant linear systems and their role in image processing.	2	2	6
	b).	Apply the Fourier transform to an image to separate low and high-frequency components	2	3	6
		OR			
4.	**a).**	Explain how noise affects edge detection and ways to minimize its impact.	2	2	6
	b).	Apply oriented pyramid analysis to identify texture patterns in an image.	2	3	6
		UNIT-3			
5.	**a).**	Explain the concept of stereopsis and its importance in 3D reconstruction.	3	2	6
	b).	Using multiple camera views, determine the relative positions of objects in a scene.	3	3	6
		OR			
6.	**a).**	Explain the role of Gestalt principles in human visual grouping.	3	2	6
	b).	Apply binocular fusion concepts to align two slightly different images	3	3	6

		into a single 3D perception.			
		UNIT-4			
7.	**a).**	Explain the working principle of the Hough Transform for detecting shapes in images.	4	2	6
	b).	Given a set of 2D points, fit a line using least-squares and explain the steps.	4	3	6
		OR			
8.	**a).**	Describe the working principle of the EM algorithm in segmentation.	4	2	6
	b).	Apply curve-fitting techniques to detect the outline of an object in an image.	4	3	6
		UNIT-5			
9.	**a).**	Explain the difference between affine cameras and perspective cameras.	5	2	6
	b).	Given a set of observed image points and their corresponding 3D coordinates, use least-squares to estimate camera parameters.	5	3	6
		OR			
10.	**a).**	Explain the use of invariants in obtaining hypotheses for object recognition.	5	2	6
	b).	Apply analytical photogrammetry to compute distances between objects in an image.	5	3	6

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE: Questions can be given as **A,B splits** or as a **Single Question** for 12 marks

		Course Code: D25140B0			
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R25**
		I M.Tech. I Semester MODEL QUESTION PAPER			
		SOFTWARE PROJECT MANAGEMENT			
		INFORMATION TECHNOLOGY			
Time: 3 Hrs.				**Max. Marks: 60 M**	
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	KL	M
		UNIT-1			
1.	**a).**	Explain the key characteristics of the Waterfall model and discuss its limitations in modern software development.	1	2	6
	b).	Compare the principles of conventional software engineering with those of modern software management. How does the transition to iterative development address traditional issues?	1	3	6
		OR			
2.	**a).**	List and explain the major drawbacks of conventional software management in handling large-scale software systems.	1	2	6
	b).	Explain any three ways of improving software economics in conventional software development.	1	2	6
		UNIT-2			
3.	**a).**	Discuss various factors affecting software cost estimation and explain any one model used for estimating cost.	2	2	6
	b).	Explain the four phases of the software development life cycle (Inception, Elaboration, Construction, Transition) with their objectives.	2	3	6
		OR			
4.	**a).**	Describe the purpose of the Inception and Transition phases in the software development lifecycle.	2	2	6
	b).	Apply the concept of software cost estimation using a simple example of a small software project.	2	3	6
		UNIT-3			
5.	**a).**	Describe the types of artifacts produced during software development. Explain management, engineering, and programmatic artifacts with examples.	3	2	6
	b).	What are iteration workflows? Explain how iteration planning helps in achieving better project control.	3	3	6
		OR			
6.	**a).**	What are engineering artifacts? List and briefly explain any three types.	3	1	6

	b).	Explain how a work breakdown structure (WBS) helps in project planning.	3	2	6
		UNIT-4			
7.	**a).**	Describe different project organization structures and explain how organizational evolution affects project success.	4	2	6
	b).	What are the seven core metrics used in software projects? Explain their significance in project control and monitoring.	4	2	6
		OR			
8.	**a).**	List and describe any three automation building blocks used in the project environment.	4	2	6
	b).	Identify and describe any three core metrics used in software project management.	4	2	6
		UNIT-5			
9.	**a).**	What is Scrum in Agile methodology? Discuss the steps involved in ADAPTing to Scrum within an organization.	5	3	6
	b).	Define DevOps. Explain the DevOps delivery pipeline and its benefits in modern software development.	5	2	6
		OR			
10.	**a).**	What is Agile methodology? Describe any two of its core values.	5	2	6
	b).	Describe the basic components of the DevOps delivery pipeline with examples.	5	2	6

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE: Questions can be given as **A,B splits** or as a **Single Question** for 12 marks

		Course Code: D25140B1			
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R25**
		I M.Tech. I Semester MODEL QUESTION PAPER			
		KNOWLEDGE REPRESENTING AND REASONING			
		INFORMATION TECHNOLOGY			
Time: 3 Hrs.				**Max. Marks: 60 M**	
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	KL	M
		UNIT-1			
1.	**a).**	Explain the role of logic in knowledge representation with historical context.	1	2	6
	b).	Discuss the varieties of logic and their relevance in reasoning.	1	2	6
		OR			
2.	**a).**	Define knowledge representation and reasoning. Why is it essential in intelligent systems?	1	2	6
	b).	Describe the measures and types used in logical representation.	1	2	6
		UNIT-2			
3.	**a).**	Illustrate top-level ontological categories with examples.	2	2	6
	b).	Explain how physical entities and abstractions are described in ontologies.	2	2	6
		OR			
4.	**a).**	Discuss the philosophical background of ontologies and their importance in KR.	2	2	6
	b).	Differentiate between sets, collections, types, and categories in ontology design.	2	2	6
		UNIT-3			
5.	**a).**	Describe the structure and use of frames in knowledge representation.	3	3	6
	b).	Explain how object-oriented systems contribute to KR.	3	3	6
		OR			
6.	**a).**	Discuss the role of rules and data in knowledge engineering.	3	3	6
	b).	Explain levels of representation in natural language semantics.	3	3	6
		UNIT-4			
7.	**a).**	Classify different types of processes and explain their role in KR.	4	3	6
	b).	Describe modal reasoning in contexts with suitable examples.	4	3	6

		OR			
8.	**a).**	Explain the syntax and semantics of contexts in KR.	4	3	6
	b).	Discuss constraint satisfaction and encapsulation of objects in contexts.	4	3	6
		UNIT-5			
9.	**a).**	Explain the limitations of logic and how fuzzy logic addresses them.	5	3	6
	b).	Discuss vagueness, uncertainty, and randomness in knowledge soup.	5	3	6
		OR			
10.	**a).**	Describe the process of sharing ontologies and accommodating multiple paradigms.	5	3	6
	b).	Explain tools and language patterns used for knowledge acquisition.	5	3	6

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE: Questions can be given as **A,B splits** or as a **Single Question** for 12 marks

				Course Code: D25140B2	
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					**R25**
I M.Tech. I Semester MODEL QUESTION PAPER					
SOFTWARE RELIABILITY AND QUALITY MANAGEMENT					
Information Technology					
Time: 3 Hrs.				**Max. Marks: 60 M**	
Answer **ONE Question** from **EACH UNIT**					
All questions carry equal marks					
Assume suitable data if necessary					
			CO	KL	M
		UNIT-1			
1.	**a).**	Why is software reliability considered a critical aspect in modern software systems, and how does it differ from general software quality?	1	2	6
	b).	Explain the fundamental differences between software reliability and hardware reliability. Why are traditional hardware reliability models not always suitable for software?	1	2	6
		OR			
2.	**a).**	What is the relationship between software reliability and system availability? How do failures affect both metrics in a real-time system?	1	2	6
	b).	Describe the general characteristics of software reliability models. What are the key assumptions and parameters typically used in these models?	1	2	6
		UNIT-2			
3.	**a).**	What is Halstead's Software Metric, and how does it quantify software complexity and reliability?	2	2	6
	b).	Compare Time Series Models and Nonhomogeneous Poisson Process (NHPP) Models in software reliability. What are their key assumptions and application areas?	2	2	6
		OR			
4.	**a).**	What is Curve Fitting in software reliability modeling, and how can it be used to predict future software failures based on historical failure data?	2	3	6
	b).	Define failure rate models in the context of software reliability. What are the typical assumptions and use cases for these models?	2	2	6
		UNIT-3			
5.	**a).**	How is the memoryless property of Markov processes relevant to modeling software failure behavior?	3	2	6
	b).	Explain the structure and working of General Poisson-Type Models in	3	2	6

		software reliability. What kind of failure behavior do they best represent?			
		OR			
6.	**a).**	What is the Fault Reduction Factor in Poisson-Type Models, and how does it influence the prediction of software reliability growth?	3	2	6
	b).	What are Binomial-Type Models in software reliability modeling? Describe their basic assumptions and practical applications.	3	2	6
		UNIT-4			
7.	**a).**	How does Least Squares Estimation work in parameter estimation for reliability models? In what cases is it preferred over MLE?	4	2	6
	b).	Describe the concept of Bayesian Inference in software reliability. How does it incorporate prior knowledge into parameter estimation?	4	2	6
		OR			
8.	**a).**	What are some common problems and challenges associated with different software reliability models in practice?	4	2	6
	b).	How can the predictive validity of different software reliability model groups be assessed? Provide examples.	4	2	6
		UNIT-5			
9.	**a).**	What are software quality attributes? List and briefly explain at least four key attributes that define high-quality software	5	2	6
	b).	How are quality metrics used to measure software quality? Give examples of commonly used software quality metrics.	5	2	6
		OR			
10.	**a).**	Define verification and validation in the context of software development. How do they differ in purpose and execution?	5	2	6
	b).	What are the main functions of Software Quality Assurance (SQA) in a software project? How does SQA help in maintaining software quality?	5	3	6

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE: Questions can be given as **A,B splits** or as a **Single Question** for 12 marks

		Course Code: D25140B3			
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R25**
		I M.Tech. I Semester MODEL QUESTION PAPER			
		NATURAL LANGUAGE PROCESSING			
		INFORMATION TECHNOLOGY			
Time: 3 Hrs.				**Max. Marks: 60 M**	
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks.			
		Assume suitable data if necessary.			
			CO	KL	M
		UNIT-1			
1.	**a).**	Explain the origins of natural language processing and outline major challenges in developing NLP systems. Give suitable examples	1	2	6
	b).	Describe grammar-based and statistical language modeling techniques. Illustrate with an example of each.	1	2	6
		OR			
2.	**a).**	Explain regular expressions and finite-state automata. Discuss their applications in NLP.	1	2	6
	b).	What is the minimum edit distance? Explain its role in spelling correction with an example.	1	2	6
		UNIT-2			
3.	**a).**	Define N-grams. Explain unsmoothed, smoothed, and backoff models with examples.	2	2	6
	b).	Compare and contrast rule-based, stochastic, and transformation-based Part-of-Speech tagging approaches.	2	2	6
		OR			
4.	**a).**	Describe the architecture and workings of Hidden Markov Models for PoS tagging.	2	4	6
	b).	Explain Maximum Entropy models in PoS tagging with an example.	2	4	6
		UNIT-3			
5.	**a).**	Explain context-free grammars (CFG) and their role in syntactic analysis. Provide examples of English grammar rules.	3	4	6
	b).	Discuss ambiguity in parsing. Explain how probabilistic CFGs help in resolving ambiguity.	3	4	6
		OR			
6.	**a).**	Compare shallow parsing and deep parsing in NLP applications.	3	4	6
	b).	Describe the CYK algorithm for syntactic parsing. Provide a suitable example.	3	4	6

		UNIT-4			
7.	**a).**	Explain first-order logic and its applications in representing semantics.	4	4	6
	b).	What is Word Sense Disambiguation (WSD)? Discuss supervised and dictionary-based approaches to WSD	4	4	6
		OR			
8.	**a).**	Explain thematic roles and selectional restrictions in semantic analysis.	4	4	6
	b).	Compare thesaurus-based and distributional methods for measuring word similarity.	4	4	6
		UNIT-5			
9.	**a).**	Describe the process of anaphora resolution using Hobbs' algorithm.	5	2	6
	b).	Discuss the importance of lexical resources such as WordNet and FrameNet in NLP applications.	5	2	6
		OR			
10.	**a).**	Present a case study using the Penn Treebank and Brill's Tagger for PoS tagging in real-world NLP systems.	5	2	6
	b).	Explain the role of British National Corpus (BNC) in developing NLP models.	5	2	6

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE: Questions can be given as **A,B splits** or as a **Single Question** for 12 marks

		Course Code: D2524001			
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R25**
		I M.Tech. II Semester MODEL QUESTION PAPER			
		FULL STACK TECHNOLOGIES			
		INFORMATION TECHNOLOGY			
Time: 3 Hrs.				**Max. Marks: 60 M**	
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	KL	M
		UNIT-1			
1.	**a).**	Explain the working of HTTP, FTP, and SMTP protocols with neat diagrams.	1	2	6
	b).	Discuss the importance of DNS in Internet communication.	1	2	6
		OR			
2.	**a).**	Explain XML DTD and XML Schema with examples.	1	2	6
	b).	Define DOM and compare DOM vs SAX approaches.	1	3	6
		UNIT-2			
3.	**a).**	Explain JavaScript objects, primitives, and expressions with examples.	2	2	6
	b).	Write a JavaScript program to find the largest of three numbers.	2	3	6
		OR			
4.	**a).**	Explain AngularJS expressions with examples (ARRAY, Objects, Strings).	2	2	6
	b).	Illustrate form validation and submission in AngularJS with an example.	2	3	6
		UNIT-3			
5.	**a).**	Explain variables, constants, and data types in PHP with examples.	3	2	6
	b).	Write a PHP program to calculate factorial of a number.	3	3	6
		OR			
6.	**a).**	What is Node.js? Explain its advantages and process model.	3	2	6
	b).	Write a Node.js program to create a simple HTTP server.	3	3	6
		UNIT-4			
7.	**a).**	Explain jQuery syntax, selectors, and events with examples.	4	2	6
	b).	Write a jQuery code to toggle between showing and hiding an image.	4	3	6
		OR			
8.	**a).**	Explain different types of Joins in MySQL with examples.	4	2	6

	b).	Write a query using sub-query to find employees earning more than average salary.	4	4	6
		UNIT-5			
9.	**a).**	Explain the architecture and features of MongoDB.	5	2	6
	b).	Write commands to create a collection, insert documents, and display them.	5	3	6
		OR			
10.	**a).**	Explain the RESTful architecture with an example of HTTP methods (GET, POST, PUT, DELETE).	5	3	6
	b).	Compare SOAP and RESTful services in terms of scalability and usage.	5	4	6

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE: Questions can be given as **A,B splits** or as a **Single Question** for 12 marks

		Course Code: D2524002			
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R25**
		I M.Tech. II Semester MODEL QUESTION PAPER			
		MACHINE LEARNING			
		Information Technology			
Time: 3 Hrs.				**Max. Marks: 60 M**	
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	KL	M
		UNIT-1			
1.	**a).**	Explain the evolution of Machine Learning paradigms and differentiate between Rote Learning, Inductive Learning, and Reinforcement Learning.	1	3	6
	b).	Discuss the stages in a machine learning workflow with examples of data acquisition, feature engineering, and model evaluation.	1	4	6
		OR			
2.	**a).**	Describe different types of data used in ML and how data representation impacts model performance.	1	3	6
	b).	Explain the concept of search and learning in machine learning with an example of model selection.	1	4	6
		UNIT-2			
3.	**a).**	Define proximity measures and discuss various distance metrics used in KNN classification.	2	3	6
	b).	Compare K-Nearest Neighbor Classifier and Radius Distance Nearest Neighbor Algorithm with respect to their performance	2	4	6
		OR			
4.	**a).**	Explain KNN regression and discuss how it differs from KNN classification.	2	3	6
	b).	Analyze the performance of classifiers and regression algorithms based on distance measures.	2	4	6
		UNIT-3			
5.	**a).**	Explain impurity measures in decision tree construction. Give examples of how they affect classification accuracy	3	3	6
	b).	Describe the Random Forest algorithm and explain its advantages in classification and regression tasks.	3	4	6
		OR			
6.	**a).**	State and explain Bayes' rule. Discuss the optimality of the Bayes	3	3	6

		classifier.			
	b).	Differentiate between the **Naïve Bayes Classifier** and the general Bayes classifier, highlighting the assumption of class conditional independence.	3	4	6
		UNIT-4			
7.	**a).**	Describe the Perceptron Learning Algorithm and explain how it classifies linearly separable data.	4	3	6
	b).	Explain the Kernel Trick in Support Vector Machines and how it enables non-linear classification.	4	4	6
		OR			
8.	**a).**	Discuss the architecture of Multi-Layer Perceptrons (MLPs) and explain the backpropagation training process.	4	4	6
	b).	Compare and contrast Logistic Regression and Linear Regression in machine learning.	4	3	6
		UNIT-5			
9.	**a).**	Compare partitional clustering and hierarchical clustering approaches with examples.	5	3	6
	b).	Explain the working of the Expectation Maximization-based clustering algorithm.	5	4	6
		OR			
10.	**a).**	Describe the Fuzzy C-Means Clustering algorithm and compare it with K-Means.	5	4	6
	b).	Explain Spectral Clustering and discuss its advantages over conventional clustering methods.	5	3	6

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE: Questions can be given as **A,B splits** or as a **Single Question** for 12 marks

					Course Code: D2524003
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R25**
		I M.Tech. II Semester MODEL QUESTION PAPER			
		CLOUD COMPUTING			
		INFORMATION TECHNOLOGY			
Time: 3 Hrs.					**Max. Marks: 60 M**
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks.			
		Assume suitable data if necessary.			
			CO	KL	M
		UNIT-1			
1.	**a).**	Define Cloud Computing. Describe any three characteristics of cloud computing.	1	2	6
	b).	Differentiate between IaaS, PaaS, and SaaS with one example for each.	1	2	6
		OR			
2.	**a).**	List and explain the types of cloud deployment models with one example for each.	1	2	6
	b).	Describe the Cloud Computing Reference Model and explain its layers.	1	2	6
		UNIT-2			
3.	**a).**	Describe the Inter-Process Communication (IPC)? Briefly explain any two IPC mechanisms.	2	2	6
	b).	Explain the difference between parallel computing and distributed computing with suitable examples.	2	2	6
		OR			
4.	**a).**	Explain the four hardware architectures used in parallel computing?	2	2	6
	b).	Explain the concept of Service-Oriented Architecture (SOA) and how it relates to cloud computing.	2	2	6
		UNIT-3			
5.	**a).**	What are the characteristics of a virtualized environment? List and explain any three.	3	2	6
	b).	Explain the role of Docker and Kubernetes in managing containerized applications.	3	3	6
		OR			
6.	**a).**	Compare Virtual Machines (VMs) and Containers. List two advantages of containers over VMs.	3	2	6
	b).	Describe the use of Amazon EC2 and Amazon ECS in cloud computing.	3	3	6

		UNIT-4			
7.	**a).**	Explain the term fault tolerance in cloud computing. Why is it important?	4	2	6
	b).	Describe cloud security architecture and mention its key components.	4	2	6
		OR			
8.	**a).**	List and describe any three factors affecting scalability in cloud computing.	4	2	6
	b).	What is cloud interoperability? Why is it important in cloud environments?	4	2	6
		UNIT-5			
9.	**a).**	Explain Function-as-a-Service (FaaS)? How is it related to serverless computing?	5	2	6
	b).	Explain the three main layers of cloud-centric IoT architecture.	5	2	6
		OR			
10.	**a).**	Explain the concept of serverless computing. Give an example of a public cloud platform that supports it.	5	2	6
	b).	Define Fog Computing and explain how it differs from Edge Computing.	5	2	6

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE: Questions can be given as **A,B splits** or as a **Single Question** for 12 marks

					Course Code: D25240A0
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R25**
		I M.Tech. II Semester MODEL QUESTION PAPER			
		SOFTWARE REQUIREMENTS AND ESTIMATION			
		Information Technology			
Time: 3 Hrs.					**Max. Marks: 60 M**
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks.			
		Assume suitable data if necessary.			
			CO	KL	M
		UNIT-1			
1.	**a).**	Explain the different types of software requirements with suitable examples.	1	2	6
	b).	Describe how software requirements are linked to risk management. Provide examples of risks and mitigation strategies.	1	2	6
		OR			
2.	**a).**	Compare various requirements elicitation techniques. When would you use each?	1	2	6
	b).	Explain the key components of a Software Requirements Specification (SRS) document. Why is it important?	1	2	6
		UNIT-2			
3.	**a).**	Describe the change management process in software requirements. Why is it crucial for project success?	2	2	6
	b).	Explain the concept of "links in the requirements chain" with suitable examples.	2	2	6
		OR			
4.	**a).**	Describe the elements of a use case model and draw a use case diagram for an online shopping system.	2	2	6
	b).	Discuss the importance of state transition diagrams in modelling dynamic behavior of systems. Provide an example.	2	3	6
		UNIT-3			
5.	**a).**	Explain any two software estimation methods. Discuss their advantages and limitations.	3	2	6
	b).	Describe common problems associated with software estimation	3	2	6
		OR			
6.	**a).**	Explain the two views of software sizing. How are they used in project estimation?	3	2	6
	b).	What is LOC estimation? Explain the steps involved in estimating effort	3	2	6

		using LOC.			
		UNIT-4			
7.	**a).**	Define productivity in the context of software engineering. How does it impact effort estimation?	4	2	6
	b).	Discuss the major estimation factors that influence software project effort and schedule.	4	2	6
		OR			
8.	**a).**	Explain the key features and components of the COCOMO II model.	4	2	6
	b).	How is cost estimated in a software project? Describe any one method with an example.	4	2	6
		UNIT-5			
9.	**a).**	Explain the benefits of using a Requirements Management Tool.	5	2	6
	b).	Describe the key features desirable in software estimation tools.	5	2	6
		OR			
10.	**a).**	What is IFPUG? How is it used in software estimation?	5	2	6
	b).	Discuss the steps involved in implementing a requirements management automation tool in an organization.	5	2	6

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE: Questions can be given as **A,B splits** or as a **Single Question** for 12 marks

					Course Code: D25240A1
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R25**
		I M.Tech. II Semester MODEL QUESTION PAPER			
		SOFTWARE QUALITY ENGINEERING			
		INFORMATION TECHNOLOGY			
Time: 3 Hrs.					**Max. Marks: 60 M**
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks.			
		Assume suitable data if necessary.			
			CO	KL	M
		UNIT-1			
1.	**a).**	Explain how expectations of software quality differ for users, developers, and business stakeholders.	1	2	6
	b).	Describe software correctness and defects and how they impact software quality.	1	2	6
		OR			
2.	**a).**	Explain quality characteristics defined in the ISO-9126 model.	1	2	6
	b).	Describe the difference between historical and ahistorical perspectives of software quality.	1	2	6
		UNIT-2			
3.	**a).**	Define software quality assurance. How does QA relate to defect management?	2	2	6
	b).	Explain how software inspection helps in early fault detection and improves product quality.	2	2	6
		OR			
4.	**a).**	Describe the key defect prevention techniques used in software QA?	2	2	6
	b).	Define defect containment? Explain the concept of software fault tolerance with an example.	2	3	6
		UNIT-3			
5.	**a).**	Explain how quality engineering integrates into the software development lifecycle.	3	2	6
	b).	Describe how quality engineering supports continuous process improvement.	3	2	6
		OR			
6.	**a).**	Define quality planning in software engineering. What are its key components?	3	2	6
	b).	Explain the role of metrics in quality assessment and continuous improvement.	3	2	6

		UNIT-4			
7.	**a).**	Explain the difference between test execution and result checking.	4	2	6
	b).	Explain the benefits and challenges of implementing test automation.	4	2	6
		OR			
8.	**a).**	Describe how test execution differs in manual vs automated testing environments.	4	2	6
	b).	Explain how test analysis leads to product quality improvements.	4	3	6
		UNIT-5			
9.	**a).**	Explain how checklist-based testing is applied during system testing.	5	2	6
	b).	Discuss the steps involved in constructing an operational profile.	5	2	6
		OR			
10.	**a).**	Explain how partition coverage improves test efficiency and defect detection.	5	2	6
	b).	Explain how the operational profile for cartridge support software was constructed.	5	2	6

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE: Questions can be given as **A,B splits** or as a **Single Question** for 12 marks

					Course Code: D25240A2
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R25**
		I M.Tech. II Semester MODEL QUESTION PAPER			
		SOFTWARE DESIGN METHODOLOGIES			
		INFORMATION TECHNOLOGY			
Time: 3 Hrs.					**Max. Marks: 60 M**
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks.			
		Assume suitable data if necessary.			
			CO	KL	M
		UNIT-1			
1.	**a).**	Explain the differences between functional and non-functional requirements and discuss why both are important in the software development process.	1	2	6
	b).	Describe the purpose and activities involved in conducting a feasibility study for a software project.	1	2	6
		OR			
2.	**a).**	Explain the difference between user requirements and system requirements	1	2	6
	b).	Describe the importance of requirements validation in the software engineering process.	1	2	6
		UNIT-2			
3.	**a).**	Describe the nature of the software design process. Discuss with examples from real-world software systems.	2	2	6
	b).	Discuss the role of cost estimation, budget constraints, return on investment, and trade-offs in shaping design choices.	2	2	6
		OR			
4.	**a).**	Describe various quality attributes of a well-designed software product.	2	2	6
	b).	Explain the key challenges and benefits of collaborative software design?	2	2	6
		UNIT-3			
5.	**a).**	Explain the key design practices for the object-oriented paradigm.	3	2	6
	b).	Describe the importance of user and task analysis in interface design.	3	2	6
		OR			
6.	**a).**	Explain the process of designing components in component-based software engineering.	3	2	6
	b).	Compare and contrast the Unified Process with other object-oriented design methodologies..	3	2	6

		UNIT-4			
7.	**a).**	Explain the concept of the management spectrum in software project management. Describe the four key elements	4	2	6
	b).	Describe the significance of the W5HH principle in project management.	4	2	6
		OR			
8.	**a).**	Explain the difference between size-oriented metrics and function-oriented metrics.	4	2	6
	b).	Identify and explain the critical practices that are essential for successful software project management.	4	3	6
		UNIT-5			
9.	**a).**	Explain the difference between reactive and proactive risk strategies in software risk management.	5	2	6
	b).	Describe how timeline charts can be used to track the schedule of an object-oriented software project.	5	2	6
		OR			
10.	**a).**	Identify and explain common types of software risk Provide examples of each and discuss their potential impacts.	5	3	6
	b).	Explain the components of the RMMM (Risk Mitigation, Monitoring, and Management) plan and discuss how it helps in effective risk management during a software project.	5	2	6

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE: Questions can be given as **A,B splits** or as a **Single Question** for 12 marks

					Course Code: D25240A3
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R25**
		I M.Tech. II Semester MODEL QUESTION PAPER			
		SOFTWARE ARCHITECTURE & DESIGN PATTERNS			
		Information Technology			
Time: 3 Hrs.					**Max. Marks: 60 M**
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	KL	M
		UNIT-1			
1.	**a).**	What is a design pattern? how design patterns solve design problems	1	2	6
	b).	Define software engineering and explain the need of the Software Engineering?	1	2	6
		OR			
2.	**a).**	What is object-oriented development? Explain about key concepts of object-oriented design other related concepts.	1	2	8
	b).	List out the benefits and drawbacks of the paradigm	1	2	4
		UNIT-2			
3.	**a).**	What is Analysis? Explain the different technique to gathering the requirements	2	2	6
	b).	Identify the Function requirements and Non-Functional requirements for the following System. **Vehicle Insurance Renewal**	2	3	6
		OR			
4.	**a).**	Employee Payroll Management System (EPMS): A reputed manufacturing firm is interested in getting its payroll to be computerized. The firm has over 1000 employees. There are different categories of employees, viz. employees who get paid a regular salary every month, employees who are paid on a weekly basis, and employees who are paid on a daily basis. The firm stores both personal information and employment information about each employee. Personal information such as name (in the form of first and last name), address, date of birth, educational qualifications, etc. are captured. Employment information such as date of joining, department, salary, benefits, numbers of dependents, probation period, leave details, hourly rate, daily rate etc. are also stored. The EPMS generates payroll for the employees as per the requirements, viz. daily for employees who are paid on a daily basis, weekly for employees who are paid on a weekly	2	4	12

		basis and monthly for employees who are paid a regular salary. The accounts department head (ADT) has access to generate payroll. The ADT logs in to the system using a user id and password. The system authenticates and allows the user to generate the payroll **Task Statement:** Identify the functional and non-functional requirements			
	b).	Apply UML modeling techniques to draw a Class diagram	2	3	6
		UNIT-3			
5.	**a).**	How do you implement a class behavior can be changed at run time (Strategy Design and a Class Abstraction and its implementations can be modified independently (Bridge Design Pattern) using design patterns	3	3	12
		OR			
6.	**a).**	Explain the following design patterns with an examples 1. façade 2. proxy 3. flyweight	3	2	12
		UNIT-4			
7.	**a).**	Illustrate Multi-layer and Client-Server Architectural Patterns.	4	2	6
	b).	Categorize the Design Principles to build good System Design?	4	3	6
		OR			
8.	**a).**	Assume you are designing a Software System. **Problem Statement:** How do you reduce the interconnection between classes? & How do you obtain the power of polymorphism? Based on the above statement Identify the appropriate Design Patterns and explain?	4	3	12
		UNIT-5			
9.	**a).**	Explain the following 1. java remote method invocation 2. Implementing an object oriented system on the web	5	2	12
		OR			
10.	**a).**	Analyse the Web services (SOAP, Restful) in detail	5	3	8
	b).	Write about the Enterprise Service Bus	5	2	4

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE: Questions can be given as **A,B splits** or as a **Single Question** for 12 marks

					Course Code: D25240B0
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R25**
		I M.Tech. II Semester MODEL QUESTION PAPER			
		AGILE METHODOLOGIES			
		INFORMATION TECHNOLOGY			
Time: 3 Hrs.					**Max. Marks: 60 M**
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	KL	M
		UNIT-1			
1.	**a).**	Explain the Agile values in the Agile Manifesto and their importance in software development.	1	2	6
	b).	Describe a fractured project perspective and how Agile addresses it.	1	2	6
		OR			
2.	**a).**	Explain the concept of "No Silver Bullet" and how Agile principles respond to it.	1	2	6
	b).	Describe the steps involved in starting a new Agile methodology	1	2	6
		UNIT-2			
3.	**a).**	Explain the 12 Principles of Agile Software Development with suitable examples.	2	3	6
	b).	Discuss how effective communication and teamwork improve Agile project execution, citing the Ebook Reader Project as a case.	2	3	6
		OR			
4.	**a).**	Analyze the role of continuous improvement in enhancing both the Agile project and the team's performance.	2	3	6
	b).	Explain the importance of customer collaboration in Agile and its impact on successful project delivery.	2	3	6
		UNIT-3			
5.	**a).**	Explain the roles and responsibilities of the Scrum Master, Product Owner, and Development Team interact to ensure successful Scrum implementation.	3	3	6
	b).	Describe the Sprint Planning, incorporating User Stories, Story Points, Velocity, and Burndown Charts, can improve project predictability and delivery outcomes.	3	3	6
		OR			
6.	**a).**	Explain the concept of self-organizing teams in Scrum and how Scrum values support effective teamwork.	3	3	6

	b).	Differentiate between Iterative and Incremental development in Scrum.	3	3	6
		UNIT-4			
7.	**a).**	Explain the primary practices of Extreme Programming (XP) and their role in adapting to change.	4	2	6
	b).	Describe how XP values influence team mindset and collaboration with users.	4	2	6
		OR			
8.	**a).**	Explain incremental design in XP and its advantages over monolithic design.	4	2	6
	b).	Describe how refactoring and continuous integration improve code quality in XP.	4	2	6
		UNIT-5			
9.	**a).**	Analyze how Lean principles and value stream mapping can be applied to identify and eliminate waste in Agile software development.	5	4	6
	b).	Examine the mechanisms by which Kanban enhances workflow, regulates WIP limits, and fosters continuous improvement.	5	4	6
		OR			
10.	**a).**	Examine how root cause analysis and systems thinking contribute to seeing the whole and delivering value faster.	5	4	6
	b).	Analyze how Agile coaching principles address resistance to change and promote team improvement.	5	4	6

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE: Questions can be given as **A,B splits** or as a **Single Question** for 12 marks

		Course Code: D25240B1			
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R25**
		I M.Tech. II Semester MODEL QUESTION PAPER			
		SOCIAL MEDIA ANALYTICS			
		Information Technology			
Time: 3 Hrs.				**Max. Marks: 60 M**	
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks.			
		Assume suitable data if necessary.			
			CO	KL	M
		UNIT-1			
1.	**a).**	Explain the architecture of the World Wide Web. How does it support social media platforms?	1	2	6
	b).	List and explain the core characteristics of social media with relevant examples.	1	2	6
		OR			
2.	**a).**	Discuss the key features of a modern social networking site. Support your answer with examples	1	2	6
	b).	Explain the role of Facebook Insights in monitoring social media campaigns.	1	2	6
		UNIT-2			
3.	**a).**	Compare social media analytics with traditional business analytics	2	2	6
	b).	List and explain the Seven Layers of Social Media Analytics	2	2	6
		OR			
		Illustrate the stages of the Social Media Analytics Cycle with a suitable example	2	2	6
	b).	Compare at least four leading social media analytics tools based on their features, usability, and data accuracy.	2	2	6
		UNIT-3			
5.	**a).**	Illustrate the challenges in handling multilingual and code-mixed social media texts.	3	3	6
	b).	Explain the primary goals of performing text analytics on social media data?	3	3	6
		OR			
6.	**a).**	List and explain common preprocessing steps involved in social media text analysis	3	3	6
	b).	Illustrate the advantages and limitations of using open-source tools for real-time social media monitoring	3	3	6

		UNIT-4			
7.	**a).**	Discuss about social media actions analytics and explain how it differs from traditional text analytics	4	2	6
	b).	Compare various tools and platforms used for analysing social media actions	4	2	6
		OR			
8.	**a).**	Summarize the Cover-More Group case study. What was the primary objective of using social media actions analytics?	4	2	6
	b).	Describe the data sources used in the Cover-More Group case study and how was data collected and pre-processed	4	2	6
		UNIT-5			
9.	**a).**	Explain the different types of hyperlinks in the context of social media	5	2	6
	b).	List and compare at least four hyperlink analytics tools. What are their key features and limitations	5	2	6
		OR			
10.	**a).**	Discuss how hyperlinks contribute to the virality of certain YouTube videos in the case study “Hyperlinks and Viral YouTube Videos”	5	2	6
	b).	Explain the metrics used to analyze hyperlink performance in the YouTube viral video context	5	2	6

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE: Questions can be given as **A,B splits** or as a **Single Question** for 12 marks

					Course Code: D25240B2
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					**R25**
I M.Tech. II Semester MODEL QUESTION PAPER					
DESIGN PATTERNS					
INFORMATION TECHNOLOGY					
Time: 3 Hrs.					**Max. Marks: 60 M**
Answer **ONE Question** from **EACH UNIT**					
All questions carry equal marks					
Assume suitable data if necessary					
			CO	KL	M
		UNIT-1			
1.	**a).**	Explain the evolution of storage technology and architecture with relevant examples.	1	2	6
	b).	Describe the key challenges in managing information and the information lifecycle in modern storage systems.	1	2	6
		OR			
2.	**a).**	Discuss the architecture of intelligent storage systems and RAID data protection mechanisms.	1	2	6
	b).	Explain data centre infrastructure components and their roles in storage management.	1	2	6
		UNIT-2			
3.	**a).**	Explain the differences between Direct-Attached Storage (DAS), Storage Area Networks (SAN), and Network-Attached Storage (NAS) with examples.	2	2	6
	b).	Illustrate the SCSI command model and its significance in disk drive interfaces.	2	3	6
		OR			
4.	**a).**	Describe the Fibre Channel architecture and its components used in SANs.	2	2	6
	b).	Demonstrate how different factors affecting NAS performance and availability with real-world cases.	2	3	6
		UNIT-3			
5.	**a).**	Summarize Content-Addressed Storage (CAS) and discuss its architecture and benefits.	3	2	6
	b).	Explain various forms of storage virtualization and analyse the challenges involved in virtualization.	3	2	6
		OR			
6.	**a).**	Describe object storage and retrieval in CAS with relevant	3	2	6

		examples.			
	b).	Compare the SNIA storage virtualization taxonomy and different virtualization configurations.	3	2	6
		UNIT-4			
7.	**a).**	Explain backup methods and recovery considerations in storage management.	4	2	6
	b).	Outline the role of backup topologies and backup granularity in data protection.	4	2	6
		OR			
8.	**a).**	Discuss local and remote replication technologies, emphasizing their use cases and challenges.	4	2	6
	b).	Explain the backup process and restore operations in NAS environments.	4	2	6
		UNIT-5			
9.	**a).**	Analyse the storage security framework and explain the risk triad in storage networks.	5	3	6
	b).	Evaluate the key storage security domains and their implementation in storage networking.	5	4	6
		OR			
10.	**a).**	Examine the challenges in managing storage infrastructure and strategies to overcome them.	5	3	6
	b).	Evaluate storage infrastructure monitoring and management activities with practical examples.	5	4	6

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE: Questions can be given as **A,B splits** or as a **Single Question** for 12 marks

					Course Code: D25240B3
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R25**
		I M.Tech. II Semester MODEL QUESTION PAPER			
		BLOCKCHAIN TECHNOLOGIES			
		INFORMATION TECHNOLOGY			
Time: 3 Hrs.					**Max. Marks: 60 M**
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks.			
		Assume suitable data if necessary.			
			CO	KL	M
		UNIT-1			
1.	**a).**	Explain the origin of blockchain technology and discuss its fundamental components with examples.	1	2	6
	b).	Compare different types of blockchain (public, private, and consortium) and explain their consensus protocols.	1	2	6
		OR			
2.	**a).**	Define decentralisation and distribution in blockchain networks. How do they improve trust and transparency?	1	2	6
	b).	Explain Bitcoin, altcoins, and tokens. Discuss their usage in real-world scenarios.	1	2	6
		UNIT-2			
3.	**a).**	Describe the architecture of a public blockchain system. Explain the functioning of the Bitcoin and Ethereum blockchains.	2	2	6
	b).	Define smart contracts and oracles. Discuss different types of smart contracts and oracles with examples.	2	2	6
		OR			
4.	**a).**	Explain the process of deploying a smart contract in Ethereum. What are the characteristics that make it secure?	2	2	6
	b).	Discuss three real-world industrial applications of smart contracts.	2	2	6
		UNIT-3			
5.	**a).**	Explain the characteristics and architecture of a private blockchain system with an example.	3	4	6
	b).	Discuss different algorithms used in permissioned blockchains, including Byzantine Fault Tolerance.	3	4	6
		OR			
6.	**a).**	Describe consortium blockchains. Discuss the Hyperledger platform and its applications.	3	4	6
	b).	Compare Ripple and Corda in terms of architecture, consensus, and	3	4	6

		industry use cases.			
		UNIT-4			
7.	**a).**	Discuss security and privacy challenges in blockchain systems. Explain with reference to Bitcoin.	4	2	6
	b).	Explain identity management and authentication in blockchain technology.	4	2	6
		OR			
8.	**a).**	Explain the security aspects of Hyperledger Fabric. How are smart contracts protected?	4	2	6
	b).	Discuss performance and scalability issues in blockchain networks. Suggest possible solutions.	4	2	6
		UNIT-5			
9.	**a).**	Present a case study of a blockchain application in the retail sector.	5	3	6
	b).	Explain the steps to create a blockchain application using Python, mentioning relevant packages.	5	3	6
		OR			
10.	**a).**	Discuss blockchain applications in healthcare or energy sectors with examples.	5	3	6
	b).	Explain the components of the Hyperledger Fabric network and its application development process.	5	3	6

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE: Questions can be given as **A,B splits** or as a **Single Question** for 12 marks

					Course Code: D2534001
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					**R25**
II M.Tech. I Semester MODEL QUESTION PAPER					
RESEARCH METHODOLOGY AND IPR					
INFORMATION TECHNOLOGY					
Time: 3 Hrs.					**Max. Marks: 60M**
Answer **ONE Question** from **EACH UNIT**					
All questions carry equal marks					
Assume suitable data if necessary					
			CO	KL	M
UNIT-1					
1.	**a).**	Write briefly about good Research criteria.	1	2	6
	b).	What are the errors in selecting a research problem?	1	2	6
OR					
2.	**a).**	Describe briefly the Research process with a neat sketch.	1	2	6
	b).	Describe the scope and objectives of research problems in academic and industrial contexts.	1	3	6
UNIT-2					
3.	**a).**	Write briefly about Effective Literature studies approaches.	2	2	6
	b).	Explain about Research ethics.	2	2	6
OR					
4.	**a).**	Write briefly about Effective technical writing.	2	3	6
	b).	Explain about the Format of research proposal.	2	3	6
UNIT-3					
5.	**a).**	Write about the various steps in acquisition of trademarks rights.	3	2	6
	b).	Discuss research ethics and its role in maintaining academic integrity.	3	3	6
OR					
6.	**a).**	Write briefly about International cooperation on Intellectual Property.	3	2	6
	b).	Explain the procedure for grants of patents.	3	2	6
UNIT-4					
7.	**a).**	Explain about patent information and databases.	4	2	6
	b).	Define Intellectual Property Rights (IPR) and explain patents, designs, trademarks, and copyrights.	4	2	6
OR					
8.	**a).**	Write briefly about scope of patent rights.	4	2	6
	b).	Write briefly about Licensing and transfer of technology.	4	2	6
UNIT-5					
9.	**a).**	Write briefly about Administration in the patent system.	5	2	6
	b).	Explain the scope of patent rights, licensing, and technology transfer.	5	3	6

		OR			
10.	**a).**	Write briefly about New developments in IPR.	5	2	6
	b).	Explain IPR case studies involving IITs and their significance in technology commercialization	5	3	6

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE: Questions can be given as **A, B splits** or as a **Single Question** for 12 marks