SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)	R23

III B.Tech. I Semester MODEL QUESTION PAPER
VISUAL DESIGN AND COMMUNICATION
For CSD

Time: 3 Hrs.	Max. Marks: 70 M

Answer Question No.1 compulsorily
Answer **ONE Question** from **EACH UNIT**
Assume suitable data if necessary

					10 X 2=20 Marks		
			CO	**KL**	**M**		
1	**a).**	Define visual language with an example	1	2	2
	b).	Explain the importance of colour in visual communication.	1	2	2
	c).	Differentiate between symmetry and asymmetry in design.	2	2	2
	d).	Describe visual balance with a relevant example.	2	2	2
	e).	Summarize any two practical uses of typography.	3	2	2
	f).	Apply the concept of layout grids to a brochure design.	3	2	2
	g).	Demonstrate photographic composition using a real-world scenario.	4	3	2
	h).	Illustrate the role of videography in brand communication.	4	3	2
	i).	Identify the concept of semiotics in design.	5	4	2
	j).	Explain storytelling as a design strategy.	5	4	2
					5 x 10 = 50 Marks
		UNIT-I			
2.	**a).**	Explain the relationship of visual language with nature and the environment.	1	2	5
	b).	Discuss the elements of visual language with suitable examples.	1	2	5
		OR			
3.	**a).**	Write short notes on: Dots, Lines, Forms in design.	1	2	5
	b).	Explain the significance of space, texture, and pattern in visual communication.	1	2	5
		UNIT-II			
4.	**a).**	Describe the principles of harmony, balance, and contrast in visual design.	2	2	5
	b).	Explain the role of alignment, proximity, and gradation in visual structure.	2	2	5

		OR			
5.	**a).**	Explain symmetry, rhythm, and juxtaposition with examples.	2	2	5
	b).	Discuss dominance, subordination, and transition in design.	2	2	5
		UNIT-III			
6.	**a).**	Explain typography as a tool for communication with examples.	3	2	5
	b).	What are layout grids and how do they support content development?	3	2	5
		OR			
7.	**a).**	Explain the hierarchy of information and its significance in design.	3	2	5
	b).	How can typography and images be applied in signage and identity systems?	3	2	5
		UNIT-IV			
8.	**a).**	Describe the process of using photography for storytelling.	4	3	5
	b).	Explain different techniques used in videography to communicate ideas.	4	3	5
		OR			
9.	**a).**	How can photography be used to document and create meaning?	4	3	5
	b).	Explain the steps to create a 2-minute visual narrative using videography.	4	3	5
		UNIT-V			
10.	**a).**	Define major theories of communication in the visual domain?	5	4	5
	b).	Define semiotics and explain how signs contribute to visual perception.	5	4	5
		OR			
11.	**a).**	How can storytelling help in scoping design problems?	5	4	5
	b).	Discuss how narrative structures influence problem-solving in design.	5	4	5

CO-COURSE OUTCOME   KL-KNOWLEDGE LEVEL   M-MARKS

NOTE: Questions can be given as A, B splits or as a single Question for 10 marks

				Course Code: B23CD3102

Course Code: B23CD3102
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)   **R23**
III B.Tech. I Semester MODEL QUESTION PAPER
COMPUTER NETWORKS
For CSD

Time: 3 Hrs.	Max. Marks: 70 M

Answer Question No.1 compulsorily
Answer **ONE Question** from **EACH UNIT**
Assume suitable data if necessary

			CO	KL	M
					10 X 2=20 Marks
1	**a).**	Explain any two functions of the physical layer.	1	2	2
	b).	How does the OSI model differ from the TCP/IP model?	1	2	2
	c).	Illustrate the working of the checksum error detection technique with a simple example.	2	3	2
	d).	How does the stop-and-wait flow control mechanism ensure reliable transmission?	2	2	2
	e).	What is the difference between Aloha and Slotted Aloha in terms of efficiency?	3	2	2
	f).	Mention any two types of Ethernet and their data rates.	3	2	2
	g).	Divide the IP address 192.168.10.0/24 into two subnets and mention their ranges.	4	3	2
	h).	What is the role of the ICMP protocol in network diagnostics?	4	2	2
	i).	List any two services provided by TCP.	5	2	2
	j).	Distinguish between HTTP and FTP based on their port numbers and usage.	5	2	2
					5 x 10 = 50 Marks
		UNIT-I			
2.	**a).**	Explain OSI and TCP/IP models and compare them.	1	2	5
	b).	Describe various types of transmission media with examples	1	2	5
		OR			
3.	**a).**	Explain digital transmission methods (digital-to-digital and analog-to-digital).	1	2	5
	b).	Describe the concept of multiplexing and compare FDM and TDM.	1	3	5
		UNIT-II			
4.	**a).**	Explain error detection techniques: Parity, CRC, and Checksum	2	2	5

	b).	Describe Go-Back-N and Selective Repeat ARQ protocols.	2	3	5
		OR			
5.	**a).**	Explain framing and flow control mechanisms in the data link layer.	2	2	5
	b).	Discuss the working of HDLC protocol.	2	3	5
		UNIT-III			
6.	**a).**	Compare CSMA/CD and CSMA/CA protocols.	3	3	5
	b).	Explain the architecture and working of IEEE 802.11 (Wireless LAN).	3	2	5
		OR			
7.	**a).**	Describe the working of Bluetooth architecture.	3	2	5
	b).	Write a short note on Fast Ethernet and Gigabit Ethernet	3	3	5
		UNIT-IV			
8.	**a).**	Demonstrate subnetting by dividing the network 192.168.1.0/24 into 4 equal subnets and determine their address ranges.	4	3	5
	b).	Differentiate Distance Vector and Link State routing algorithms based on convergence time, bandwidth usage, and complexity.	4	4	5
		OR			
9.	**a).**	Differentiate Distance Vector and Link State routing algorithms based on convergence time, bandwidth usage, and complexity.	4	3	5
	b).	Examine the structural differences between IPv4 and IPv6 address formats and assess the impact of NAT during migration.	4	4	5
		UNIT-V			
10.	**a).**	Illustrate the steps involved in TCP connection establishment, maintenance, and termination with appropriate diagrams.	5	3	5
	b).	Compare DNS, SMTP, and HTTP protocols in terms of functionality, port usage, and application areas.	5	4	5
		OR			
11.	**a).**	Demonstrate how TCP handles flow and congestion control during data transmission.	5	3	5
	b).	Evaluate the importance of firewalls in securing networks and distinguish them from other application-layer security tools.	5	4	5

CO-COURSE OUTCOME   KL-KNOWLEDGE LEVEL   M-MARKS

NOTE : Questions can be given as A,B splits or as a single Question for 10 marks

					Course Code: B23CD3103
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. I Semester MODEL QUESTION PAPER			
		DATA MINING AND DATA WAREHOUSING			
		For CSD			
Time: 3 Hrs.					**Max. Marks: 70 M**
		Answer Question No.1 compulsorily			
		Answer **ONE Question** from **EACH UNIT**			
		Assume suitable data if necessary			
					10 X 2=20 Marks
			CO	**KL**	**M**
1	**a).**	Define OLAP and list its key operations.	1	2	2
	b).	Differentiate between data warehouse and database.	1	3	2
	c).	What is the purpose of data transformation in preprocessing?	2	2	2
	d).	List any two data reduction techniques.	2	3	2
	e).	State Bayes' Theorem.	3	2	2
	f).	What is entropy in decision tree induction?	3	2	2
	g).	Define frequent itemset with an example.	4	2	2
	h).	Differentiate between Apriori and FP-Growth.	4	3	2
	i).	What is DBSCAN in clustering?	5	2	2
	j).	List the strengths of K-means clustering.	5	2	2
					5 x 10 = 50 Marks
		UNIT-I			
2.	**a).**	Explain the architecture of a data warehouse.	1	3	5
	b).	Describe OLAP operations with suitable examples.	1	2	5
		OR			
3.	**a).**	Discuss data warehouse design and implementation strategies.	1	2	5
	b).	Compare OLAP and OLTP systems.	1	3	5
		UNIT-II			
4.	**a).**	Describe different data preprocessing techniques.	2	3	5
	b).	Explain the process of data discretization with an example.	2	3	5
		OR			
5.	**a).**	What is data integration? Explain its challenges.	2	2	5
	b).	Discuss any two data transformation techniques.	2	2	5

		UNIT-III			
6.	**a).**	Explain decision tree induction and attribute selection measures.	3	3	5
	b).	Discuss model evaluation techniques with examples.	3	2	5
		OR			
7.	**a).**	Describe Naive Bayes classification with an example.	3	2	5
	b).	Differentiate between rule-based and decision tree classification.	3	2	5
		UNIT-IV			
8.	**a).**	Explain Apriori algorithm with an example.	4	2	5
	b).	What is confidence-based pruning? Illustrate.	4	3	5
		OR			
9.	**a).**	Describe FP-Growth algorithm and its working.	4	3	5
	b).	Explain compact representation of frequent itemsets.	4	2	5
		UNIT-V			
10.	**a).**	Explain K-means clustering algorithm and discuss its limitations.	5	3	5
	b).	Describe DBSCAN algorithm and its advantages.	5	3	5
		OR			
11.	**a).**	Compare partitioning, hierarchical, and density-based clustering methods.	5	3	5
	b).	Describe the concept and algorithm of agglomerative clustering.	5	3	5

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

NOTE : Questions can be given as A,B splits or as a single Question for 10 marks

			Course Code: B23CD3104		
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)	**R23**	

III B.Tech. I Semester MODEL QUESTION PAPER

SOFTWARE ENGINEERING

For CSD

Time: 3 Hrs.	Max. Marks: 70 M

Answer Question No.1 compulsorily

Answer **ONE Question** from **EACH UNIT**

Assume suitable data if necessary

10 X 2=20 Marks

				CO	KL	M
1	**a).**	Describe any two disadvantages of the Waterfall model.		1	2	2
	b).	Discuss any two software process models.		1	2	2
	c).	Explain software project management complexities.		2	2	2
	d).	Describe the purpose of a Software Requirements Specification (SRS) document.		2	2	2
	e).	Write two characteristics of a good software design.		3	3	2
	f).	Illustrate the difference between command-line and graphical user interfaces.		3	3	2
	g).	Write any two purposes of code review in software development.		4	3	2
	h).	Illustrate how testing differs in object-oriented programs.		4	3	2
	i).	Write any two scopes of CASE tools in software engineering.		5	3	2
	j).	Apply a CASE tool in any one phase of software development (e.g., design or testing).		5	3	2

5 x 10 = 50 Marks

		UNIT-I				
2.	**a).**	Explain principals of Agile model?		1	2	5
	b).	Discuss the major differences between traditional programming practices and modern software engineering approaches.		1	2	5
		OR				
3.	**a).**	Explain Agile variants (scrum, XP)?		1	2	5
	b).	Explain spiral process model with merits and demerits?		1	2	5
		UNIT-II				
4.	**a).**	Demonstrate the structure and contents of a well-defined Software Requirements Specification (SRS) document.		2	3	5
	b).	Illustrate the steps involved in requirements gathering and analysis with		2	3	5

		an example.			
		OR			
5.	a).	Write key components and steps to develop Use cases ?	2	3	5
	b).	Explain the requirements modelling approaches in details?	2	2	5
		UNIT-III			
6.	a).	Demonstrate how a good software design can be characterized using real-life software systems.	3	3	5
	b).	Apply the concepts of cohesion and coupling in designing a modular inventory management system.	3	3	5
		OR			
7.	a).	Write a detailed note on layered design architecture and its benefits in large-scale systems.	3	3	5
	b).	Apply Agile methodology to a real-world project scenario and explain its benefits over traditional methods.	3	3	5
		UNIT-IV			
8.	a).	Write about various types of software testing, and **illustrate** their application with real-life scenarios.	4	3	5
	b).	Apply black-box and white-box testing strategies to test a simple calculator application.	4	3	5
		OR			
9.	a).	Illustrate the methodology of smoke testing and its role in agile environments.	4	3	5
	b).	Apply Six Sigma principles to improve software quality and **illustrate** with a case study or hypothetical example.	4	3	5
		UNIT-V			
10.	a).	Demonstrate the architecture of a CASE environment with a labeled diagram and real-world example.	5	3	5
	b).	Apply CASE tools in a software development project and explain their benefits and limitations.	5	3	5
		OR			
11.	a).	Demonstrate the complete software maintenance process, including identification, impact analysis, and cost estimation.	5	3	5
	b).	Illustrate the various models of software maintenance and explain their applicability with examples.	5	3	5

CO-COURSE OUTCOME   KL-KNOWLEDGE LEVEL   M-MARKS

NOTE : Questions can be given as A,B splits or as a single Question for 10 marks

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)	R23

III B.Tech. I Semester MODEL QUESTION PAPER

CYBER SECURITY

For CSD

Time: 3 Hrs.	Max. Marks: 70 M

Answer Question No.1 compulsorily

Answer **ONE Question** from **EACH UNIT**

Assume suitable data if necessary

					10 X 2=20 Marks	
			CO	KL	M	
1	**a).**	Define cybersecurity. What are its primary objectives?	1	2	2	
	b).	What is the difference between information security and cybersecurity?	1	2	2	
	c).	How is lifecycle management important in cybersecurity?	2	3	2	
	d).	List any two tools used in security architecture?	2	3	2	
	e).	Explain the concept of operational threat environments.	3	4	2	
	f).	What is risk management in cybersecurity?	3	4	2	
	g).	Distinguish between system threats and application threats.	4	4	2	
	h).	What is vulnerability management and its role in security?	4	4	2	
	i).	What is OS hardening? Give an example.	5	3	2	
	j).	Name any two cybersecurity tools and their use	5	3	2	
					5 x 10 = 50 Marks	
		UNIT-I				
2.	**a).**	a) Explain the principles of cybersecurity: confidentiality, integrity, and availability.	1	2	5	
	b).	b) Describe authentication and non-repudiation with examples.	1	2	5	
		OR				
3.	**a).**	Discuss the role and objectives of cybersecurity in modern organizations.	1	2	5	
	b).	Explain the difference between cybersecurity and information security with examples.	1	2	5	
		UNIT-II				
4.	**a).**	Apply the concept of lifecycle management in designing a cybersecurity framework	2	3	5	
	b).	Describe common security architecture tools used in enterprise systems.	2	3	5	

		OR			
5.	**a).**	Explain the key steps in risk management	2	3	5
	b).	Analyze any two operational threat environments with suitable examples.	2	3	5
		UNIT-III			
6.	**a).**	Analyze the process of categorizing and responding to cybersecurity incidents.	3	4	5
	b).	Describe the functions of Identity and Access Management (IAM) in incident recovery.	3	4	5
		OR			
7.	**a).**	How do you categorize different cybersecurity incidents? Analyze with examples	3	5	5
	b).	Evaluate the effectiveness of incident recovery planning.	3	5	5
		UNIT-IV			
8.	**a).**	Analyze the purpose of logs and alerts in security monitoring.	4	4	5
	b).	Describe how packet analysis helps in detecting network threats.	4	4	5
		OR			
9.	**a).**	What is vulnerability management? Explain its lifecycle and use.	4	4	5
	b).	Discuss any two network monitoring tools and their security features.	4	4	5
		UNIT-V			
10.	**a).**	Explain how the Metasploit tool is used for ethical hacking.	5	3	5
	b).	Describe various operating system hardening techniques.	5	3	5
		OR			
11.	**a).**	Describe the purpose and implementation of a DMZ in a secure network.	5	3	5
	b).	Explain the role of digital signatures in cybersecurity.	5	3	5

CO-COURSE OUTCOME   KL-KNOWLEDGE LEVEL   M-MARKS

NOTE : Questions can be given as A,B splits or as a single Question for 10 marks

					Course Code: B23CD3106
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)				**R23**
		III B.Tech. I Semester MODEL QUESTION PAPER				
		INTERNET OF THINGS				
		For CSD				
		Time: 3 Hrs.			**Max. Marks: 70 M**	
		Answer Question No.1 compulsorily				
		Answer **ONE Question** from **EACH UNIT**				
		Assume suitable data if necessary				
						10 X 2=20 Marks
			CO	KL	M	
1	**a).**	Distinguish between HTTP and HTTPS with an example.	1	2	2	
	b).	Write any four real-life applications of IoT and briefly state their purpose.	1	3	2	
	c).	Discuss data enrichment and its role in IoT data management	2	2	2	
	d).	Write two advantages of using a modified OSI stack in IoT/M2M system	2	3	2	
	e).	Explain any two web communication protocols used in connected IoT devices.	3	2	2	
	f).	Interpret the purpose of message communication protocols in IoT systems?	3	3	2	
	g).	Explain the importance of data organization in IoT business processes?	4	2	2	
	h).	Demonstrate data acquisition in the context of IoT and give an example.	4	3	2	
	i).	Write participatory sensing in the context of IoT? Give an example.	5	3	2	
	j).	Discuss the role of cloud computing in IoT data collection and storage?	5	2	2	
					5 x 10 = 50 Marks	
		UNIT-I				
2.	**a).**	Explain the basic structure and working of the Internet of Things (IoT).	1	2	5	
	b).	Discuss any two application layer protocols (HTTP, HTTPS, FTP, Telnet) used in IoT communication.	1	2	5	
		OR				
3.	**a).**	Write the design principles for connected IoT devices. Apply these principles to the design of a smart water meter.	1	3	5	
	b).	Apply the concept of Internet connectivity principles to design a connectivity solution for a smart farming application.	1	3	5	
		UNIT-II				
4.	**a).**	Explain the layers and design standardizations used in IoT/M2M systems.	2	2	5	
	b).	Describe the role of communication technologies (e.g., ZigBee, LTE,	**2**	**2**	**5**	

			CO	KL	M
		LoRa) in IoT applications..			
		OR			
5.	a).	Demonstrate the ETSI M2M domains and their high-level capabilities. How do these support scalability in IoT solutions?	2	3	5
	b).	Write how data enrichment and consolidation improve IoT analytics. Apply this to a predictive maintenance scenario in manufacturing.	2	3	5
		UNIT-III			
6.	a).	Explain the design principles of web connectivity for connected devices	3	2	5
	b).	Distinguish between web communication and message communication protocols in IoT.	3	2	5
		OR			
7.	a).	Domnstrate the role of message communication protocols (like MQTT or CoAP) in device-to-cloud communication.	3	3	5
	b).	Illustrate a simple architecture showing web connectivity between a sensor node and a cloud platform using RESTful APIs.	3	3	5
		UNIT-IV			
8.	a).	Explain the process of acquiring and storing data in IoT/M2M systems..	4	2	5
	b).	Describe the role of business models in the implementation of IoT-enabled services and applications.	4	2	5
		OR			
9.	a).	Apply different business models enabled by IoT and apply one to a smart energy management system.	4	3	5
	b).	Write the role of enterprise systems in IoT data analytics. Demonstrate with an example involving inventory tracking.	4	3	5
		UNIT-V			
10.	a).	Demonstrate how cloud platforms support data collection, storage, and computing in IoT applications. Apply this to a smart agriculture system.	5	3	5
	b).	Illustrate various sensor technologies and their role in sensing the physical world. Apply this to environmental pollution monitoring.	5	3	5
		OR			
11.	a).	Discuss the key components of a wireless sensor network (WSN) and their role in IoT environments.	5	2	5
	b).	Describe the cloud service models (IaaS, PaaS, SaaS) and explain their relevance to IoT/M2M applications	5	2	5

CO-COURSE OUTCOME   KL-KNOWLEDGE LEVEL   M-MARKS

NOTE : Questions can be given as A,B splits or as a single Question for 10 marks

	Course Code: B23CD3107

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)	**R23**

III B.Tech. I Semester MODEL QUESTION PAPER

ARTIFICIAL INTELLIGENCE

For CSD

Time: 3 Hrs.	Max. Marks: 70 M

Answer Question No.1 compulsorily

Answer **ONE Question** from **EACH UNIT**

Assume suitable data if necessary

					10 X 2=20 Marks		
			CO	**KL**	**M**
1	**a).**	Describe two key features of intelligent behaviour.	1	2	2
	b).	Explain how heuristics improve search efficiency.	1	2	2
	c).	Explain the values of alpha and beta after evaluating the first branch.	2	2	2
	d).	Identify two natural deduction rules and apply one to a given problem.	2	2	2
	e).	Classify the different approaches to knowledge representation	3	2	2
	f).	Choose how to represent "The man pushed the box" using conceptual dependency theory.	3	3	2
	g).	Illustrate the use of conditional probability in solving a diagnostic problem.	4	3	2
	h).	Compare the dependencies between variables in the structure of a Bayesian network.	4	4	2
	i).	Demonstrate the process of fuzzification with an example	5	3	2
	j).	Illustrate how multiple fuzzy rules interact in a fuzzy inference system.	5	3	2
				5 x 10 = 50 Marks		
		UNIT-I			
2.	**a).**	Summarize the foundations of artificial intelligence and their relevance to modern AI.	1	2	5
	b).	Discuss various applications of AI	1	2	5
		OR			
3.	**a).**	Categorize intelligent systems based on their working principle	1	3	5
	b).	Illustrate the working of the Iterative Deepening A* algorithm with a small example.	1	3	5
		UNIT-II			
4.	**a).**	Explain the natural deduction system and how it is used in logical proofs.	2	2	5

	b).	Describe the axiomatic system and its key inference rules.	2	2	5
		OR			
5.	a).	Demonstrate the use of semantic tableau to test the satisfiability of a formula.	2	3	5
	b).	Interpret the truth table to determine the validity of a propositional logic expression.	2	3	5
		UNIT-III			
6.	a).	Illustrate the structural difference between declarative and procedural knowledge with suitable examples	3	3	5
	b).	Illustrate how frames can represent structured knowledge in an AI medical diagnosis system	3	3	5
		OR			
7.	a).	Contrast conceptual dependency and scripts as methods of representing event-based knowledge.	3	4	5
	b).	Examine how the semantic web improves data retrieval over traditional web search	3	4	5
		UNIT-IV			
8.	a).	Demonstrate how probability theory is used to manage uncertainty in AI-based weather prediction	4	3	5
	b).	Demonstrate how to calculate a combined certainty factor for a rule-based expert system.	4	3	5
		OR			
9.	a).	Distinguish between dependent and independent nodes in a Bayesian network using a given example.	4	4	5
	b).	Distinguish between belief, plausibility, and probability with suitable examples.	4	4	5
		UNIT-V			
10.	a).	Interpret the results of union, intersection, and complement on two fuzzy sets.	5	3	5
	b).	Demonstrate how multi-valued logic is used to make decisions in uncertain environments.	5	3	5
		OR			
11.	a).	Distinguish between fuzzy sets and classical sets with appropriate examples.	5	4	5
	b).	Illustrate how fuzzy inference rules derive conclusions from fuzzy inputs and analyze their effect	5	4	5

CO-COURSE OUTCOME   KL-KNOWLEDGE LEVEL   M-MARKS

NOTE : Questions can be given as A,B splits or as a single Question for 10 marks

					Course Code: B23CD3201

III B.Tech. II Semester MODEL QUESTION PAPER

AUTOMATA THEORY AND COMPILER DESIGN

For CSD

Time: 3 Hrs.	Max. Marks: 70 M

Answer Question No.1 compulsorily

Answer **ONE Question** from **EACH UNIT**

Assume suitable data if necessary

10 X 2=20 Marks

			CO	KL	M
1	**a).**	Define language, string, and alphabet with an example.	1	2	2
	b).	Differentiate between DFA and NFA.	1	3	2
	c).	Write a regular expression for identifiers in a programming language.	2	2	2
	d).	What is ambiguity in grammars? Give an example.	2	3	2
	e).	Define PDA and list its components.	3	3	2
	f).	What is undecidability? Mention one undecidable problem.	3	3	2
	g).	What is the role of a lexical analyzer?	4	3	2
	h).	Differentiate between top-down and bottom-up parsing.	4	3	2
	i).	What is a syntax-directed definition?	5	3	2
	j).	What is three-address code? Give an example.	5	3	2
			5 x 10 = 50 Marks		
		UNIT-I			
2.	**a).**	Construct a DFA for binary strings divisible by 3.	1	2	5
	b).	What is a regular language? Convert the given regular expression to regular language? a.(1+Î)(00*1)0* b.(0*1*)000(0+1)* c.(00+10)*1*(10+00)*	1	3	5
		OR			
3.	**a).**	Design an ε-NFA for the regular expression (a|b)*abb.	1	3	5
	b).	Prove that the class of regular languages is closed under union and concatenation with examples.	1	3	5
		UNIT-II			
4.	**a).**	Construct Context free grammar for L= { WCWR / W in (0+1)* }	2	3	5

	b).	Define GNF and Convert the following CFG to GNF S → AA | a, A → SS | b	2	3	5
		OR			
5.	a).	Explain the statement of the Pumping lemma on Regular sets and list the applications of pumping lemma.	2	3	5
	b).	Construct Context free grammar for generating all palindrome strings over (0,1)	2	3	5
		UNIT-III			
6.	a).	Construct a PDA to accept language of odd length palindrome strings	3	3	5
	b).	Explain about PCP and give an example	3	2	5
		OR			
7.	a).	Show the equivalence between CFGs and PDAs using an example.	3	3	5
	b).	Explain undecidability with an example of a recursively enumerable but undecidable language.	3	3	5
		UNIT-IV			
8.	a).	Design a lexical analyzer using regular expressions to identify keywords, identifiers, and numbers.	4	3	5
	b).	Design LR parser for the given grammar and check the acceptance of input string of your own R→R+|+R|RR|R*|(R)|a|b	4	3	5
		OR			
9.	a).	Explain about six phases of compiler with its neat diagram?	4	3	5
	b).	Derive the left most & right most derivations of string 'aabbaa'. G=({S,A},{a,b},S,P) where P is S → aAS|a A → SbA|SS|ba	4	3	5
		UNIT-V			
10.	a).	Write syntax-directed definitions to compute postfix expressions for arithmetic expressions.	5	3	5
	b).	Generate three-address code for the expression a + b * c - d / e.	5	3	5
		OR			
11.	a).	Explain L-attributed definitions with an example.	5	3	5
	b).	Describe stack-based storage organization and access to non-local data in runtime environments.	5	3	5

CO-COURSE OUTCOME   KL-KNOWLEDGE LEVEL   M-MARKS

NOTE : Questions can be given as A,B splits or as a single Question for 10 marks

	Course Code: B23CD3202	
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)	**R23**	
III B.Tech. II Semester MODEL QUESTION PAPER		
MACHINE LEARNING		
For CSD		
Time: 3 Hrs.	Max. Marks: 70 M	
Answer Question No.1 compulsorily		
Answer **ONE Question** from **EACH UNIT**		
Assume suitable data if necessary		

			10 X 2=20 Marks		
			CO	**KL**	**M**
1	**a).**	Explain the difference between supervised and unsupervised learning.	1	2	2
	b).	Why is feature engineering considered an important step in machine learning?	1	2	2
	c).	Explain the difference between distance measures and similarity functions in nearest neighbor-based models.	2	2	2
	d).	What is a proximity measure, and why is it important in K-nearest neighbor classification?	2	2	2
	e).	Explain what an impurity measure is in the context of decision trees, and give an example.	3	2	2
	f).	What does class conditional independence mean in the Naive Bayes classifier?	3	2	2
	g).	Explain the purpose of the kernel trick in support vector machines (SVMs)	4	2	2
	h).	What is the role of the perceptron learning algorithm in training a linear classifier?	4	2	2
	i).	Explain the main difference between divisive clustering and agglomerative clustering.	5	2	2
	j).	What is soft clustering, and how does it differ from hard clustering in assigning data points to clusters?	5	2	2
			5 x 10 = 50 Marks		
		UNIT-I			
2.	**a).**	Explain the key differences between learning by rote and learning by induction with suitable examples.	1	2	5
	b).	Describe the different stages involved in a machine learning workflow and explain why each stage is important.	1	2	5
		OR			
3.	**a).**	Interpret how reinforcement learning differs from supervised and unsupervised learning. Provide a simple example to support your	1	2	5

		explanation.			
	b).	Summarize the importance of training, validation, and test datasets in the machine learning process. Why is data split necessary?	1	2	5
		UNIT-II			
4.	a).	Describe with examples how proximity between binary patterns is calculated in nearest neighbor-based models.	2	2	5
	b).	Explain the working principle of the K-Nearest Neighbor (KNN) classifier and how it uses distance measures to classify new data points.	2	2	5
		OR			
5.	a).	Compare and contrast KNN regression with KNN classification in terms of working mechanism and typical applications.	2	2	5
	b).	Discuss different classification algorithms that rely on distance measures and highlight how they differ from each other.	2	2	5
		UNIT-III			
6.	a).	Construct a simple decision tree manually for the dataset below using the Gini impurity measure and show the split process step by step: Outlook Temperature Play Tennis Sunny Hot No Overcast Cool Yes Rainy Mild Yes	3	3	5
	b).	Given class prior probabilities and likelihoods, apply Bayes' classifier to classify a new sample into the most probable class.	3	3	5
		OR			
7.	a).	Using a given dataset, demonstrate how a random forest classifier improves prediction accuracy compared to a single decision tree by reducing overfitting.	3	3	5
	b).	Apply the Naive Bayes classifier to classify an email as spam or not spam, given word occurrence probabilities in spam and non-spam emails.	3	3	5
		UNIT-IV			
8.	a).	Given a small linearly separable dataset, analyze and explain how the perceptron learning algorithm updates the weights during training iterations. Illustrate with at least two updates.	4	4	5
	b).	Examine the limitations of linear SVMs on non-linearly separable data and demonstrate how kernel functions transform input space to overcome these limitations.	4	4	5
		OR			

9.	a).	Analyze the backpropagation process in multilayer perceptrons by deriving the gradient updates for a simple two-layer network. Explain the role of each term in the update rule.	4	4	5
	b).	Compare and contrast logistic regression and linear regression by analyzing their objective functions, output interpretations, and suitable problem types. Provide examples where one is preferred over the other.	4	4	5
		UNIT-V			
10.	a).	Analyze the steps of the K-Means clustering algorithm on a given small 2D dataset (e.g., four points), and demonstrate how cluster centroids and assignments change over iterations	5	4	5
	b).	Examine the main differences between fuzzy C-means clustering and rough K-means clustering, highlighting situations where each method is more appropriate.	5	4	5
		OR			
11.	a).	Given a similarity matrix of five patterns, analyze how spectral clustering would partition the data by computing the Laplacian matrix and explaining the role of eigenvectors.	5	4	5
	b).	Critically compare partitional clustering methods (like K-Means) with hierarchical methods (like agglomerative clustering), analyzing their computational complexity, interpretability, and suitability for different data types.	5	4	5

CO-COURSE OUTCOME   KL-KNOWLEDGE LEVEL   M-MARKS

NOTE : Questions can be given as A,B splits or as a single Question for 10 marks

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)	R23

III B.Tech. II Semester MODEL QUESTION PAPER

DESIGN OF INTERACTIVE SYSTEMS

For CSD

Time: 3 Hrs.	Max. Marks: 70 M

Answer Question No.1 compulsorily

Answer **ONE Question** from **EACH UNIT**

Assume suitable data if necessary

10 X 2=20 Marks

			CO	KL	M
1	**a).**	Define usability requirements in interactive systems.	1	2	2
	b).	Identify any two principles of user interface design.	1	3	2
	c).	What is participatory design and why is it important?	2	3	2
	d).	Differentiate between expert reviews and usability testing.	2	2	2
	e).	Give two examples of direct manipulation in user interfaces.	3	2	2
	f).	Describe the benefits of using natural language in computing	3	3	2
	g).	List different types of pointing devices used in HCI.	4	2	2
	h).	Explain how response time impacts user satisfaction.	4	3	2
	i).	What makes an error message user-friendly?	5	2	2
	j).	How do advanced filtering techniques improve information search?	5	3	2

5 x 10 = 50 Marks

		UNIT-I			
2.	**a).**	Explain the purpose of usability measures and how they help in interface design.	1	2	5
	b).	Describe the goals of interactive systems for professional design.	1	2	5
		OR			
3.	**a).**	What is universal usability? Describe its key aspects with examples.	1	2	5
	b).	Explain the Object-Action Interface Model and its significance in design.	1	2	5
		UNIT-II			
4.	**a).**	Describe the organizational design approaches to support usability.	2	3	5
	b).	Explain ethnographic observation and participatory design methods.	2	3	5
		OR			
5.	**a).**	What are usability testing techniques and their relevance?	2	3	5

	b).	Explain various software tools used for interface design evaluation.	2	3	5
		UNIT-III			
6.	**a).**	Discuss direct manipulation interfaces and 3D interaction techniques.	3	3	5
	b).	Explain menu selection techniques and form filling design.	3	3	5
		OR			
7.	**a).**	Describe command and natural language-based interfaces.	3	3	5
	b).	Explain structure and naming strategies for command languages.	3	3	5
		UNIT-IV			
8.	**a).**	Discuss different interaction devices and their characteristics.	4	3	5
	b).	Explain models of response time impact and user frustration.	4	3	5
		OR			
9.	**a).**	Write about synchronous and asynchronous distributed collaboration.	4	3	5
	b).	Explain auditory and speech interfaces with suitable examples.	4	3	5
		UNIT-V			
10.	**a).**	Explain principles of display and window design.	5	3	5
	b).	Discuss the role of online help and tutorials in user assistance.	5	3	5
		OR			
11.	**a).**	Describe techniques used in advanced information search.	5	3	5
	b).	Explain the role of visualization in presenting search results.	5	3	5

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

NOTE : Questions can be given as A,B splits or as a single Question for 10 marks

		Course Code: B23CD3204	
	SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)		**R23**
	III B.Tech. II Semester MODEL QUESTION PAPER		
	SOFTWARE TESTING METHODOLOGIES		
	For CSD		

Time: 3 Hrs.		**Max. Marks: 70 M**
	Answer Question No.1 compulsorily	
	Answer **ONE Question** from **EACH UNIT**	
	Assume suitable data if necessary	

					10 X 2=20 Marks
			CO	**KL**	**M**
1	**a).**	Explain the purpose of software testing in the software development life cycle.	1	2	2
	b).	Describe what is meant by path sensitizing in path testing.	1	2	2
	c).	Differentiate between transaction flow and control flow in software testing.	2	2	2
	d).	Classify domains as 'nice' or 'ugly' with suitable characteristics.	2	2	2
	e).	Interpret the meaning of a path expression in relation to a control flow graph.	3	2	2
	f).	Summarize how regular expressions help detect flow anomalies.	3	2	2
	g).	Explain the use of state graphs in software testing.	4	2	2
	h).	Compare the features of good and bad state graphs with an example.	4	2	2
	i).	Describe the purpose of using a graph matrix in software testing.	5	2	2
	j).	Explain the meaning of the power of a matrix in the context of control flow analysis.	5	2	2
					5 x 10 = 50 Marks
		UNIT-I			
2.	**a).**	Draw a control flow graph for a given code snippet and identify all possible independent paths.	1	3	5
	b).	Apply path testing on a small program fragment and determine the set of achievable paths.	1	3	5
		OR			
3.	**a).**	Given a flow graph, demonstrate how to apply path instrumentation to track execution paths	1	3	5
	b).	Construct path predicates for a conditional structure and show how they are used in test case generation.	1	3	5

		UNIT-II			
4.	**a).**	Draw a transaction flow diagram for a simple online banking transaction and identify possible test paths.	2	3	5
	b).	Apply a data flow testing strategy (e.g., all-defs or all-uses) to a sample code snippet and identify appropriate test cases.	2	3	5
		OR			
5.	**a).**	Given a domain model for input values, design test cases using domain testing principles to cover valid and invalid regions.	2	3	5
	b).	Apply interface domain testing to a scenario where two software modules interact, and identify potential boundary and interface issues.	2	3	5
		UNIT-III			
6.	**a).**	Given a control flow graph, derive the path expression and apply reduction procedures to simplify it.	3	3	5
	b).	Construct a decision table for a specified logic-based condition and generate corresponding test cases.	3	3	5
		OR			
7.	**a).**	Apply flow anomaly detection using regular expressions on a given code example and identify invalid sequences (e.g., use without definition).	3	3	5
	b).	Use a Karnaugh-Veitch (KV) chart to simplify a logical expression derived from a program specification and explain how it assists in test case generation.	3	3	5
		UNIT-IV			
8.	**a).**	Draw a state transition graph for a simple vending machine system and identify valid test cases based on transitions.	4	3	5
	b).	Apply transition testing to a login module with states like 'idle', 'entering credentials', 'authenticated', and 'locked'. List the test cases.	4	3	5
		OR			
9.	**a).**	Given a state diagram, identify unreachable states and explain how to improve the testability of the system.	4	3	5
	b).	Design a state-based test strategy for a ticket booking system, focusing on critical transitions and potential failure paths.	4	3	5
		UNIT-V			
10.	**a).**	Given a control flow graph, construct its adjacency matrix and compute its square (power 2) to find all paths of length 2.	5	3	5
	b).	Apply the node reduction algorithm on a sample flow graph and derive	5	3	5

		the path expression.			
		OR			
11.	**a).**	Use a tool like JMeter or Selenium to record and analyze a simple user interaction flow, and represent it using a state transition graph or matrix.	5	3	5
	b).	Construct a graph matrix for a small program's control structure and demonstrate how relations among nodes help in path analysis and test case generation.	5	3	5

CO-COURSE OUTCOME   KL-KNOWLEDGE LEVEL   M-MARKS

NOTE : Questions can be given as A,B splits or as a single Question for 10 marks

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)	R23

III B.Tech. II Semester MODEL QUESTION PAPER

CRYPTOGRAPHY & NETWORK SECURITY

For CSD

Time: 3 Hrs.	Max. Marks: 70 M

Answer Question No.1 compulsorily

Answer **ONE Question** from **EACH UNIT**

Assume suitable data if necessary

					10 X 2=20 Marks		
					CO	**KL**	**M**
1	**a).**	What is the purpose of the symmetric cipher model in cryptography?			1	2	2
	b).	Explain any two commonly used security mechanisms in network communication.			1	2	2
	c).	Explain Euler's phi-function and determine the value of $\varphi(20)$.			2	2	2
	d).	State Fermat's Little Theorem and explain its significance in cryptography.			2	2	2
	e).	Describe the basic working steps of the DES algorithm.			3	2	2
	f).	Compare RSA and Diffie-Hellman algorithms in terms of encryption and key exchange.			3	2	2
	g).	Explain how HMAC is used to ensure message authentication.			4	2	2
	h).	What are the requirements for a secure cryptographic hash function?			4	2	2
	i).	What is the purpose of the HTTPS protocol in web security?			5	2	2
	j).	Explain two common email threats and describe how S/MIME mitigates them.			5	2	2
					5 x 10 = 50 Marks		
		UNIT-I					
2.	**a).**	Explain the different types of security attacks with suitable examples			1	2	5
	b).	Describe the various security services provided in network communication.			1	2	5
		OR					
3.	**a).**	Explain the symmetric cipher model with a neat diagram.			1	2	5
	b).	Describe the principles of security and their importance in secure systems.			1	2	5
		UNIT-II					
4.	**a).**	Apply Chinese Remainder Theorem to solve the system of congruences: $x \equiv 2 \pmod 3$, $x \equiv 3 \pmod 5$, $x \equiv 2 \pmod 7$			2	3	5

			CO	KL	M
	b).	Illustrate how groups and fields are used in symmetric cryptography with examples.	2	3	5
		OR			
5.	**a).**	Apply Euler's Theorem to compute 7^128 mod 60.	2	3	5
	b).	Illustrate the process of primality testing using two distinct techniques with step-by-step computation.	2	3	5
		UNIT-III			
6.	**a).**	Apply the RSA algorithm for encryption and decryption using: $p = 3, q = 11, e = 7$, message = 5	3	3	5
	b).	Demonstrate the encryption process of the AES algorithm by applying it to a sample plaintext with a given key.	3	3	5
		OR			
7.	**a).**	Demonstrate the key exchange process using the Diffie–Hellman algorithm with assumed values.	3	3	5
	b).	Apply elliptic curve cryptographic operations to demonstrate how it achieves comparable security with smaller key sizes than RSA.	3	3	5
		UNIT-IV			
8.	**a).**	Apply SHA-1 to compute the hash value of a sample message.	4	3	5
	b).	Demonstrate the process of signing and verifying a message using the RSA-PSS digital signature algorithm with suitable input values.	4	3	5
		OR			
9.	**a).**	Demonstrate the working of the CMAC algorithm using block ciphers.	4	3	5
	b).	illustrate the steps involved in signing and verifying the message using RSA-PSS.	4	3	5
		UNIT-V			
10.	**a).**	Demonstrate how Transport Layer Security (TLS) is used to secure a typical online communication session."	5	3	5
	b).	Apply IPsec concepts to illustrate how Authentication Header and ESP ensure data confidentiality and integrity.	5	3	5
		OR			
11.	**a).**	Demonstrate the process of secure email communication using PGP.	5	3	5
	b).	Illustrate how the SSH protocol is used to establish a secure remote login session with an example	5	3	5

CO-COURSE OUTCOME   KL-KNOWLEDGE LEVEL   M-MARKS

NOTE : Questions can be given as A,B splits or as a single Question for 10 marks

			Course Code: B23CD3206
	SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)		**R23**
	III B.Tech. II Semester MODEL QUESTION PAPER		
	CLOUD COMPUTING		
	For CSD		
Time: 3 Hrs.			**Max. Marks: 70 M**
	Answer Question No.1 compulsorily		
	Answer **ONE Question** from **EACH UNIT**		
	Assume suitable data if necessary		

				10 X 2=20 Marks		
				CO	**KL**	**M**
1	**a).**	Describe the concept of utility computing in the context of cloud computing		1	2	2
	b).	Compare public and private cloud deployment models with suitable points.		1	2	2
	c).	Interpret the term inter-process communication (IPC) in distributed systems.		2	2	2
	d).	Summarize the role of Service-Oriented Architecture (SOA) in cloud computing.		2	2	2
	e).	Explain how virtualization supports resource management in cloud environments.		3	2	2
	f).	Identify the benefits of using container orchestration in cloud applications.		3	2	2
	g).	Outline the meaning of cloud interoperability and its importance.		4	2	2
	h).	Classify the responsibilities between cloud provider and customer in the shared responsibility model.		4	2	2
	i).	Give an example to illustrate the concept of Function-as-a-Service (FaaS) in serverless computing.		5	2	2
	j).	Restate the role of Infrastructure-as-Code (IaC) in automating cloud infrastructure deployment.		5	2	2
				5 x 10 = 50 Marks		
		UNIT-I				
2.	**a).**	Describe the cloud computing reference model and explain its significance in understanding cloud architecture.		1	2	5
	b).	Explain the characteristics and benefits of cloud computing with suitable examples**.**		1	2	5
		OR				
3.	**a).**	Discuss the different types of cloud computing services: IaaS, PaaS, and SaaS. Give one example for each.		1	2	5
	b).	Explain the three major cloud deployment models: public, private, and hybrid, highlighting their advantages and limitations.		1	2	5

		UNIT-II			
4.	a).	Describe the elements of parallel computing and explain how they contribute to performance improvement in cloud systems.	2	2	5
	b).	Explain the different types of hardware architectures for parallel computing (SISD, SIMD, MISD, MIMD) with brief descriptions.	2	2	5
		OR			
5.	a).	Describe the key elements of distributed computing and their relevance in cloud-based environments.	2	2	5
	b).	Explain the concept of virtualization and its importance in enabling cloud computing.	2	2	5
		UNIT-III			
6.	a).	Apply your knowledge of virtualization to explain how a company can use VMware to consolidate physical servers and improve efficiency.	3	3	5
	b).	Demonstrate how Docker can be used to deploy a containerized web application. Outline the steps involved.	3	3	5
		OR			
7.	a).	Given a scenario where rapid deployment and scalability are needed, justify the use of containers over virtual machines.	3	3	5
	b).	Explain how a cloud provider like AWS uses EC2 for virtualization and ECS for container management in real-world deployments.	3	3	5
		UNIT-IV			
8.	a).	Describe the economic benefits of using cloud computing compared to traditional IT infrastructure.	4	2	5
	b).	Explain the importance of scalability and fault tolerance in a cloud computing environment.	4	2	5
		OR			
9.	a).	Discuss the role of cloud security architecture in ensuring secure cloud services.	4	2	5
	b).	Explain the need for energy efficiency in cloud data centers and describe how it can be achieved.	4	2	5
		UNIT-V			
10.	a).	Analyze the differences between AWS Lambda and OpenFaaS in terms of architecture, scalability, and use cases.	5	4	5
	b).	Compare and contrast edge computing and fog computing in the context of IoT data processing and latency management.	5	4	5
		OR			
11.	a).	Analyze how DevOps practices impact the speed and reliability of cloud application delivery.	5	4	5
	b).	Evaluate the potential of quantum cloud computing. How does it differ from classical cloud computing in solving complex problems?	5	4	5

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

NOTE : Questions can be given as A,B splits or as a single Question for 10 marks

			Course Code: B23CD3207
	SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)		**R23**
	III B.Tech. II Semester MODEL QUESTION PAPER		
	PRINCIPLES OF VIDEO EDITING AND 3D ANIMATION		
	For CSD		
Time: 3 Hrs.			**Max. Marks: 70 M**
	Answer Question No.1 compulsorily		
	Answer **ONE Question** from **EACH UNIT**		
	Assume suitable data if necessary		

			10 X 2=20 Marks		
			CO	**KL**	**M**
1	**a).**	Explain purpose of using transitions in video editing?	1	2	2
	b).	Discuss video codecs and explain their basic role in video editing.	1	2	2
	c).	Explain difference between color correction and color grading?	2	2	2
	d).	Discuss montage theory and its relevance in modern video editing.	2	2	2
	e).	Explain UV mapping and explain its role in texturing 3D models.	3	2	2
	f).	Demonstrate how UV mapping is applied to a simple 3D object.	3	3	2
	g).	Explain the purpose of character rigging in 3D animation?	4	2	2
	h).	Write two essential components of a walk cycle and explain their role in animation.	4	3	2
	i).	Use the purpose of version control in a collaborative animation project?	5	3	2
	j).	Write two key components of a professional demo reel and explain their significance.	5	3	2
			5 x 10 = 50 Marks		
		UNIT-I			
2.	**a).**	Describe the process of cutting and trimming video clips in a timeline-based editor.	1	2	5
	b).	Discuss the basic steps involved in audio editing within a video project.	1	2	5
		OR			
3.	**a).**	Demonstrate how to trim a video clip and add background music using any editing software of your choice.	1	3	5
	b).	Apply how to choose the right file format and video codec when exporting a video for web streaming.	1	3	5
		UNIT-II			
4.	**a).**	Illustrate the montage theory and its relevance in modern video editing.	2	3	5
	b).	Demonstrate the use of motion graphics and text overlays in a short	2	3	5

		promo video.			
		OR			
5.	a).	Discuss the use of green screen and compositing in video production.	2	2	5
	b).	Describe the process of audio cleanup and enhancement in post-production.	2	2	5
		UNIT-III			
6.	a).	Explain the principles of animation and how they contribute to realistic motion.	3	2	5
	b).	Describe different types of material properties and how they affect the appearance of 3D objects	3	2	5
		OR			
7.	a).	Demonstrate how to set up basic lighting and render a scene using global illumination.	3	3	5
	b).	Apply the steps to create a basic polygon model using correct edge flow and topology	3	3	5
		UNIT-IV			
8.	a).	Describe how render passes are used in post-production compositing.	4	2	5
	b).	Explain how motion graphics techniques such as logo animation and typography in motion enhance visual storytelling	4	2	5
		OR			
9.	a).	Demonstrate how to simulate cloth movement using dynamics in a 3D animation environment.	4	3	5
	b).	Illustrate composite a 3D render using multiple render layers and post-production effects.	4	3	5
		UNIT-V			
10.	a).	Explain the key steps involved in pre-production workflows and how they support smooth project execution.	5	2	5
	b).	Discuss how a demo reel contributes to a professional animation portfolio and what it typically includes.	5	2	5
		OR			
11.	a).	Apply how to develop an online portfolio and network professionally within the animation industry.	5	3	5
	b).	Demonstrate how to manage a render farm and delivery pipeline for a multi-shot animation project.	5	3	5

CO-COURSE OUTCOME   KL-KNOWLEDGE LEVEL   M-MARKS

NOTE : Questions can be given as A,B splits or as a single Question for 10 marks

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)	R23

III B.Tech. II Semester MODEL QUESTION PAPER
OBJECT ORIENTED ANALYSIS AND DESIGN
For CSD

Time: 3 Hrs.	Max. Marks: 70 M

Answer Question No.1 compulsorily

Answer **ONE Question** from **EACH UNIT**

Assume suitable data if necessary

					10 X 2=20 Marks

			CO	KL	M
1	**a).**	Define software complexity with an example.	1	2	2
	b).	Differentiate between organized and disorganized complexity.	1	2	2
	c).	Explain why modeling is needed in software engineering.	2	2	2
	d).	Summarize the UML conceptual model and its components.	2	2	2
	e).	Distinguish between a class and an object in UML.	3	2	2
	f).	Describe the purpose of interfaces in UML modeling.	3	2	2
	g).	Illustrate how interaction diagrams help in behavioral modeling.	4	2	2
	h).	Interpret the use of use case diagrams for system requirements.	4	2	2
	i).	Outline the purpose of a state chart diagram in UML.	5	2	2
	j).	Clarify what a deployment diagram shows in system architecture.	5	2	2
				5 x 10 = 50 Marks	
		UNIT-I			
2.	**a).**	Explain the attributes of a complex system with suitable examples.	1	2	5
	b).	Discuss how designing complex systems helps bring order to chaos.	1	2	5
		OR			
3.	**a).**	Describe the structure of complex systems and its significance in system development.	1	2	5
	b).	Summarize the architecture of a satellite-based navigation system and its components.	1	2	5
		UNIT-II			
4.	**a).**	Apply object-oriented modeling principles to represent a simple traffic signal controller system.	2	3	5
	b).	Develop a class diagram to model the basic structure of a traffic management system.	2	3	5

			CO	KL	M
		OR			
5.	a).	Use UML architecture to represent different views of a software system under development.	2	3	5
	b).	Demonstrate how classes and relationships are used to build a structural model in UML with a practical example.	2	3	5
		UNIT-III			
6.	a).	Construct a class diagram to represent the structure of a basic cryptanalysis system using AI techniques.	3	3	5
	b).	Apply UML modeling techniques to develop an object diagram for a login authentication system in a cryptographic application.	3	3	5
		OR			
7.	a).	Use advanced relationships (like generalization and aggregation) in a class diagram for a data encryption-decryption model.	3	3	5
	b).	Demonstrate the use of packages and roles in organizing large-scale structural models in an AI-based security application.	3	3	5
		UNIT-IV			
8.	a).	Compare use case diagrams and activity diagrams for the Vacation Tracking System. Highlight how each helps in understanding system behaviour.	4	4	5
	b).	Analyze how a sequence diagram can model the "Submit Leave Request" interaction in the Vacation Tracking System.	4	4	5
		OR			
9.	a).	Compare sequence and communication diagrams in representing the "Approve Leave Request" scenario, discussing the pros and cons of each.	4	4	5
	b).	Analyze the activity diagram of the vacation approval workflow and identify potential bottlenecks or areas for optimization.	4	4	5
		UNIT-V			
10.	a).	Analyze the role of events and signals in designing a weather data collection and alert system.	5	4	5
	b).	Examine the differences between processes and threads in the context of a real-time weather forecasting application.	5	4	5
		OR			
11.	a).	Analyze a state chart diagram for a "Weather Monitoring Device" and explain how it handles various system states.	5	4	5
	b).	Evaluate the component and deployment diagrams of a weather forecasting system to assess system distribution and scalability.	5	4	5

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

NOTE : Questions can be given as A,B splits or as a single Question for 10 mark

			Course Code: B23CD3210		
	SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**	
	III B.Tech. II Semester MODEL QUESTION PAPER				
	MOBILE ADHOC NETWORKS				
	For CSD				
Time: 3 Hrs.				**Max. Marks: 70 M**	
	Answer Question No.1 compulsorily				
	Answer **ONE Question** from **EACH UNIT**				
	Assume suitable data if necessary				
				10 X 2=20 Marks	
			CO	**KL**	**M**
1	**a)**	Explain how an ad hoc network differs from a cellular network	1	2	2
	b)	Describe two characteristics that are unique to MANETs.	1	2	2
	c)	Differentiate between proactive and reactive routing protocols.	2	2	2
	d)	Compare topology-based and position-based routing using one parameter.	2	3	2
	e)	Explain the need for security in ad hoc wireless networks.	3	2	2
	f	Compare the effects of denial-of-service (DoS) and wormhole attacks in ad hoc wireless networks.	3	3	2
	g)	Explain the role of the Mica Mote in Wireless Sensor Networks.	4	2	2
	h)	Differentiate between flat and hierarchical WSN architectures.	4	2	2
	i)	Apply NS-2 with sensor network extensions to analyze network traffic in a WSN.	5	3	2
	j)	Apply nesC programming concepts to design a simple sensor data reading module.	5	3	2
				5 x 10 = 50 Marks	
		UNIT-I			
2	**a)**	Describe the key characteristics of MANETs. How do mobility and the lack of fixed infrastructure affect communication in MANETs?	1	2	5
	b)	Identify and explain three real-world applications of MANETs. How does the flexibility and mobility of MANETs make them suitable for these applications?	1	2	5
		OR			
3	**a)**	Discuss the common challenges faced by MANETs related to routing and power consumption. How do these challenges affect the overall performance of the network?	1	2	5
	b)	Explain the role of ad hoc networks in providing wireless Internet connectivity. How do ad hoc networks help in decentralizing communication, and what are the advantages of this feature?	1	2	5
		UNIT-II			

4	a)	Explain at least three problems faced by TCP in ad hoc networks and suggest possible solutions for each.	2	3	5
	b)	Describe the classification of transport layer solutions and explain each category with examples.	2	2	5
		OR			
5.	a)	Compare TCP and ATP in terms of congestion control and reliability mechanisms in ad hoc networks.	2	3	5
	b)	Apply the concepts of TCP over ad hoc wireless networks to explain why traditional TCP performance degrades in such environments. Provide an example scenario.	2	3	5
		UNIT-III			
6.	a)	Demonstrate how mobility can affect the effectiveness of intrusion detection.	3	3	5
	b)	Illustrate with an example how a key management scheme can be used to establish secure communication between mobile nodes.	3	3	5
		OR			
7.	a)	Describe the role of Intrusion Detection Systems in securing Ad hoc Wireless Networks. Include the types and working of IDS.	3	2	5
	b)	Apply the concept of secure routing by explaining how a secure routing protocol (e.g., SAODV, ARAN) prevents specific attacks.	3	3	5
		UNIT-IV			
8	a)	Explain the design issues in Wireless Sensor Networks (WSNs) with reference to scalability, fault tolerance, and data latency.	4	2	5
	b)	Use a routing strategy to show how data packets are efficiently delivered in a sensor network with dynamic topology.	4	3	5
		OR			
9	a)	Describe the classification of WSNs based on their architecture and application domains.	4	2	5
	b)	Apply a transport protocol mechanism to ensure reliable data delivery in an energy-constrained WSN.	4	3	5
		UNIT-V			
10	a)	Demonstrate how TOSSIM can be used to simulate the behavior of a WSN routing protocol. List key steps and their purpose.	5	3	5
	b)	Analyze how secure data aggregation techniques impact energy efficiency and security trade-offs in WSNs. Provide examples where applicable.	5	4	5
		OR			
11	a)	Analyze the role of nesC and TinyGALS in programming sensor network applications. How do their programming models differ, and what are the implications for system performance?	5	4	5
	b)	Apply a suitable key management scheme to a WSN scenario where nodes are deployed randomly in a hostile environment. Justify your selection.	5	3	5

CO-COURSE OUTCOME   KL-KNOWLEDGE LEVEL   M-MARKS

NOTE : Questions can be given as A,B splits or as a single Question for 10 marks

					Course Code: B23CD3211

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)		**R23**
III B.Tech. II Semester MODEL QUESTION PAPER		
AUGMENTED REALITY & VIRTUAL REALITY		
For CSD		

Time: 3 Hrs.	**Max. Marks: 70 M**

Answer Question No.1 compulsorily
Answer **ONE Question** from **EACH UNIT**
Assume suitable data if necessary

			10 X 2=20 Marks		
			CO	**KL**	**M**
1	**a).**	List any two characteristics required for visual displays in AR.	1	2	2
	b).	Differentiate between stationary and mobile tracking systems.	1	2	2
	c).	What is marker tracking in AR, and how does it work?	2	2	2
	d).	Define natural feature tracking and list one advantage it has over marker-based tracking.	2	2	2
	e).	Explain the key difference between immersive and non-immersive virtual reality.	3	2	2
	f).	Illustrate how motion tracking enhances user immersion in VR.	3	3	2
	g).	Differentiate between ray tracing and rasterization	4	2	2
	h).	Apply a shading model to simulate lighting in a simple 3D scene.	4	3	2
	i).	Demonstrate how locomotion techniques like teleportation reduce motion sickness in VR.	5	3	2
	j).	Apply 3D audio rendering techniques to simulate a realistic soundscape in a VR concert.	5	3	2
			5 x 10 = 50 Marks		
		UNIT-I			
2.	**a).**	Explain the evolution of augmented reality by discussing its history and key milestones. How have these influenced modern AR systems?	1	2	5
	b).	Demonstrate how multimodal displays can be used in an AR-based navigation system to improve user awareness and interaction.	1	3	5
		OR			
3.	**a).**	Discuss the role of coordinate systems in AR tracking. How do they help in aligning virtual content with the real world?	1	2	5
	b).	Apply your understanding of calibration and registration to describe how an AR furniture placement app ensures that virtual objects align correctly in the real environment	1	3	5
		UNIT-II			

4.	a).	Describe various input modalities used in AR systems and explain how they contribute to user interaction.	2	2	5
	b).	Demonstrate how augmented paper can be used in an educational AR system. Describe how virtual information can be layered on top of physical documents.	2	3	5
		OR			
5.	a).	Explain the concept of tangible interfaces in augmented reality. How do they enhance user experience?	2	2	5
	b).	Apply the concept of haptic interaction to an AR surgical simulator. How can tactile feedback improve the training experience for medical students?	2	3	5
		UNIT-III			
6.	a).	Describe the relationship between human perception and VR immersion. How does the brain process virtual environments?	3	2	5
	b).	Demonstrate how VR can be used effectively in educational or medical training applications by providing a real-world scenario.	3	3	5
		OR			
7.	a).	Apply the principles of human visual perception to design a simple VR experience that minimizes motion sickness.	3	3	5
	b).	Explain the axis-angle representation of rotation with an example. How is it used to manipulate virtual objects?	3	2	5
		UNIT-IV			
8.	a).	Explain the process of visual signal transmission from the cornea to the visual cortex.	4	2	5
	b).	Describe the role of photoreceptors in color and light detection	4	2	5
		OR			
9.	a).	Explain the psychological and physiological mechanisms involved in depth perception.	4	2	5
	b).	Apply shading models to a 3D object in a virtual scene to improve lighting realism	4	3	5
		UNIT-V			
10.	a).	Use Newton's laws of motion to implement believable physical behavior for objects in a virtual physics-based game.	5	3	5
	b).	Apply the concept of vection to enhance the sense of movement in a seated VR roller coaster experience.	5	3	5
		OR			
11.	a).	Apply the principles of sound wave propagation to design spatialized audio cues in a virtual escape room game.	5	3	5
	b).	Demonstrate how motor program remapping can be used to design intuitive gesture-based input for VR controls.	5	3	5

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

NOTE : Questions can be given as A,B splits or as a single Question for 10 marks

			Course Code: B23CD3212	
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)				**R23**
III B.Tech. II Semester MODEL QUESTION PAPER				
COMPUTER GRAPHICS & ANIMATION				
For CSD				
Time: 3 Hrs.			**Max. Marks: 70 M**	
Answer Question No.1 compulsorily				
Answer **ONE Question** from **EACH UNIT**				
Assume suitable data if necessary				
			10 X 2=20 Marks	

			CO	KL	M
1	**a).**	Describe the purpose of View Ports in the MAYA interface.	1	2	2
	b).	Differentiate between the Channel Box and Hot Box in MAYA.	1	2	2
	c).	Explain the function of the UV Texture Editor in assigning a single color to an object.	2	2	2
	d).	Describe how modeling tools in the Polygon Tab are used for editing polygon models.	2	2	2
	e).	Explain how color theory influences light attributes in a 3D scene.	3	2	2
	f).	Describe the purpose and working of Interactive Photorealistic Rendering (IPR) in MAYA.	3	2	2
	g).	Explain the principle of squash and stretch used to animate objects.	4	2	2
	h).	Describe the role of the Graph Editor in controlling animation curves in MAYA.	4	2	2
	i).	Explain how a clipping mask helps organize layered artwork in Illustrator.	5	2	2
	j).	Describe the use of the Appearance panel to manage multiple strokes and fills in an object.	5	2	2
			5 x 10 = 50 Marks		
		UNIT-I			
2.	**a).**	Explain the software and hardware requirements for working with MAYA.	1	2	5
	b).	Describe the functions of the Menu Bar, Tool Bar, and Layers PaneLl in MAYA.	1	2	5
		OR			
3.	**a).**	Summarize the use of primitive objects and their customization using channel attributes.	1	2	5
	b).	Explain the role of Outline Editor and how it helps in organizing 3D scenes in MAYA.	1	2	5

4.	a).	Apply NURBS and Polygon modeling tools to create an industrial or organic object with details.	2	3	5
	b).	Demonstrate the process of UV mapping and manipulation using UV snapshot and Photoshop.	2	3	5
		OR			
5.	a).	Use Hyper shade to apply different types of maps and materials to a model.	2	3	5
	b).	Apply suitable techniques to edit **NURBS surfaces** and enhance the model using surface menu options.	2	3	5
		UNIT-III			
6.	a).	Apply different lighting types (spot, point, directional) in a scene and explain their impact.	3	3	5
	b).	Use batch rendering and explain how to configure it using Render Settings.	3	3	5
		OR			
7.	a).	Demonstrate the differences between software rendering, hardware rendering, and Mental Ray.	3	3	5
	b).	Apply vector rendering techniques and explain when and why to use them.	3	3	5
		UNIT-IV			
8.	a).	Apply animation constraints (Point, Parent, Aim) in a character rig and describe their effects.	4	3	5
	b).	Use Linear and Non-linear deformers to modify object shapes and explain the process.	4	3	5
		OR			
9.	a).	Demonstrate how to animate a camera using the timeline and resolution gates in MAYA.	4	3	5
	b).	Apply knowledge of joints and local vs world axis to create a basic character rig.	4	3	5
		UNIT-V			
10.	a).	Apply Live Trace to convert a scanned image into vector art and describe the steps involved.	5	3	5
	b).	Use 3D effects and symbol tools to enhance an illustration project.	5	3	5
		OR			
11.	a).	Demonstrate how to create and manipulate custom brushes and apply gradient themes to complex designs.	5	3	5
	b).	Apply warp effects and envelope features to transform type and graphic shapes in Illustrator.	5	3	5

CO-COURSE OUTCOME   KL-KNOWLEDGE LEVEL   M-MARKS

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