		Course Code: B23CT3101			
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. I Semester MODEL QUESTION PAPER			
		INTERNET OF THINGS			
		For CSIT			
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, LoRa) in IoT applications..	**2**	**2**	**5**
		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: B23CD3102	
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					**R23**
III B.Tech. I Semester MODEL QUESTION PAPER					
COMPUTER NETWORKS					
For CSIT					
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 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 CSIT			
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: B23CT3102	
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					**R23**
III B.Tech. I Semester MODEL QUESTION PAPER					
VISUAL DESIGN AND COMMUNICATION					
For CSIT					
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	**CO**	**KL**	**M**
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: B23CT3103
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. I Semester MODEL QUESTION PAPER			
		MOBILE COMPUTING			
		For CSIT			
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 differences between guided and unguided transmission with suitable examples.	**1**	**2**	**2**
	b).	Summarize the limitations of mobile devices and their impact on performance.	**1**	**2**	**2**
	c).	Describe the services offered by GSM in mobile communication systems.	**2**	**2**	**2**
	d).	Explain the concept of spread spectrum and its role in wireless communication.	**2**	**2**	**2**
	e).	Describe the purpose of agent discovery in mobile IP location management.	**3**	**2**	**2**
	f).	Explain how wireless sensor networks are applied in real-world scenarios.	**3**	**2**	**2**
	g).	Describe the concept of synchronization in mobile computing with an example.	**4**	**2**	**2**
	h).	Explain the role of aglets in mobile agent design.	**4**	**2**	**2**
	i).	Describe the functions of any two layers in the IEEE 802.11 protocol stack.	**5**	**2**	**2**
	j).	Explain how Wireless Transport Layer Security (WTLS) ensures secure wireless communication.	**5**	**2**	**2**
					5 x 10 = 50 Marks
		UNIT-I			
2.	**a).**	Explain the differences between guided and unguided transmission with suitable examples.	**1**	**2**	**5**
	b).	Describe signal propagation frequencies and their effect on mobile communication.	**1**	**2**	**5**
		OR			
3.	**a).**	Describe mobile computing architecture and its novel applications.	**1**	**2**	**5**
	b).	Explain signal propagation frequencies and the role of antennae in mobile communication.	**1**	**2**	**5**
		UNIT-II			
4.	**a).**	Describe the working principles of CDMA and how it differs from traditional multiplexing techniques.	**2**	**2**	**5**
	b).	Summarize the key features of GPRS architecture and its integration	**2**	**2**	**5**

		with GSM networks.			
		OR			
5.	**a).**	Explain the purpose of wireless medium access control and how it supports communication in 3G and 4G networks.	**2**	**2**	**5**
	b).	Summarize the key features of access techniques used in CDMA, WCDMA, and 4G systems.	**2**	**2**	**5**
		UNIT-III			
6.	**a).**	Demonstrate how Mobile IP handles packet delivery when a mobile node changes its point of attachment across networks. Analyze the roles of key components involved in the process.	**3**	**3**	**5**
	b).	Illustrate the handover process and location management in Mobile IP with the help of a suitable example or scenario.	**3**	**3**	**5**
		OR			
7.	**a).**	Illustrate the MANET infrastructure architecture with a labelled diagram.	**3**	**3**	**5**
	b).	Demonstrate how the architecture of wireless sensor networks supports specific applications such as environmental sensing or industrial automation.	**3**	**3**	**5**
		UNIT-IV			
8.	**a).**	Illustrate the working of a mobile agent and explain the concept of aglets.	**4**	**3**	**5**
	b).	Apply the concept of application servers to explain their functionality in handling mobile agents and data synchronization.	**4**	**3**	**5**
		OR			
9.	**a).**	Illustrate domain-dependent synchronization rules and demonstrate conflict resolution strategies with suitable examples from mobile applications.	**4**	**3**	**5**
	b).	Illustrate various synchronization models used in mobile applications with the help of real-world examples.	**4**	**3**	**5**
		UNIT-V			
10.	**a).**	Demonstrate the functioning of WAP architecture including WDP and WTLS.	**5**	**3**	**5**
	b).	Analyze the IEEE 802.11 protocol architecture and explain how its layers support data transmission in WLANs.	**5**	**3**	**5**
		OR			
11.	**a).**	Demonstrate the roles of WDP, WTLS, and the wireless transaction layer in enabling secure and reliable mobile internet communication.	**5**	**3**	**5**
	b).	Demonstrate how Wireless Transport Layer Security (WTLS) addresses key security concerns in mobile internet applications.	**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: B23CT3104	
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. I Semester MODEL QUESTION PAPER			
		NO SQL			
		For CSIT			
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 meant by 'Why NoSQL'? State a reason for choosing NoSQL over relational databases.	**1**	**2**	**2**
	b).	What is a column-family store in the context of NoSQL databases?	**1**	**2**	**2**
	c).	What is sharding in distributed databases?	**2**	**2**	**2**
	d).	Define read consistency with respect to NoSQL databases.	**2**	**2**	**2**
	e).	What is a key-value store?	**3**	**2**	**2**
	f).	List two features of a key-value store that make it suitable for storing session information.	**3**	**2**	**2**
	g).	What is a Document Database?	**4**	**2**	**2**
	h).	What is a Column-Family Data Store?	**4**	**2**	**2**
	i).	What is a Graph Database?	**5**	**2**	**2**
	j).	How does schema change in a NoSQL data store differ from that in a relational database?	**5**	**2**	**2**
				5 x 10 = 50 Marks	
		UNIT-I			
2.	**a).**	Explain the concept of impedance mismatch between relational databases and object-oriented applications.	**1**	**2**	**5**
	b).	Describe with examples how relational data differs from aggregate data in database modeling.	**1**	**2**	**5**
		OR			
3.	**a).**	What are the main features of key-value and document data models used in NoSQL systems?	**1**	**2**	**5**
	b).	Summarize the characteristics of aggregate-oriented databases and their typical use cases.	**1**	**2**	**5**
		UNIT-II			
4.	**a).**	Explain master-slave replication and how it differs from peer-to-peer replication.	**2**	**2**	**5**
	b).	Apply the concept of combining sharding and replication in designing a distributed data system for a large e-commerce website.	**2**	**3**	**5**

		OR			
5.	**a).**	Describe the CAP Theorem and its significance in distributed databases.	**2**	**2**	**5**
	b).	Illustrate how quorum-based techniques help in maintaining consistency and availability in a distributed system.	**2**	**3**	**5**
		UNIT-III			
6.	**a).**	Explain any three suitable use cases of key-value stores with brief reasons.	**3**	**2**	**5**
	b).	Demonstrate how key-value stores can be used to store and manage shopping cart data in a web application.	**3**	**3**	**5**
		OR			
7.	**a).**	Why are key-value stores not suitable for applications requiring complex relationships among data and multi-operation transactions? Explain.	**3**	**2**	**5**
	b).	Compare query capabilities of key-value stores with relational databases, especially in the context of querying by data or performing operations by sets.	**3**	**3**	**5**
		UNIT-IV			
8.	**a).**	In what situations should Document Databases not be used? Justify with examples**.**	**4**	**2**	**5**
	b).	Explain any three features of Document Databases that make them suitable for modern web applications. Give one use case.	**4**	**2**	**5**
		OR			
9.	**a).**	List and explain the features of Column-Family Data Stores. Mention two practical use cases.	**4**	**2**	**5**
	b).	Why are Column-Family Data Stores not suitable for applications with highly relational data? Support your answer with reasons.	**4**	**2**	**5**
		UNIT-V			
10.	**a).**	Explain any three key features of Graph Databases. How do they help in handling connected data?	**5**	**2**	**5**
	b).	Demonstrate any two use cases of graph databases, such as recommendation engines or location-based services, and explain how the graph structure supports them.	**5**	**3**	**5**
		OR			
11.	**a).**	When should Graph Databases be avoided in favor of relational or document databases? Justify with reasons.	**5**	**2**	**5**
	b).	Compare schema changes in RDBMS and NoSQL databases. Explain how this affects application flexibility and maintenance.	**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: B23CD3107	
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					**R23**
III B.Tech. I Semester MODEL QUESTION PAPER					
ARTIFICIAL INTELLIGENCE					
For CSIT					
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: B23CT3201
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		CRYPTOGRAPHY & NETWORK SECURITY			
		For CSIT			
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 φ(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**
	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: B23CD3202
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		MACHINE LEARNING			
		For CSIT			
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 explanation.	**1**	**2**	**5**
	b).	Summarize the importance of training, validation, and test datasets in	**1**	**2**	**5**

		the machine learning process. Why is data split necessary?			
		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	**4**	**4**	**5**

		problem types. Provide examples where one is preferred over the other.			
		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

				Course Code: B23CT3202	
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					**R23**
III B.Tech. II Semester MODEL QUESTION PAPER					
SOFTWARE ENGINEERING					
For CSIT					
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 an example.	**2**	**3**	**5**
		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

				Course Code: B23CT3203	
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					**R23**
III B.Tech. II Semester MODEL QUESTION PAPER					
AUTOMATA THEORY AND COMPILER DESIGN					
For CSIT					
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	**2**	**3**	**5**

		the applications of pumping lemma.			
	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: B23CT3204
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		REINFORCEMENT LEARNING			
		For CSIT			
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 exploitation and exploration in reinforcement learning.	**1**	**2**	**2**
	b).	Describe the role of the reward signal in a reinforcement learning framework.	**1**	**2**	**2**
	c).	Explain what an optimal value function is in a Markov Decision Process.	**2**	**2**	**2**
	d).	Interpret the purpose of the Bellman equation in dynamic programming.	**2**	**2**	**2**
	e).	Compare Monte Carlo prediction with TD prediction.	**3**	**2**	**2**
	f).	Explain the idea behind control without exploring starts in Monte Carlo methods.	**3**	**2**	**2**
	g).	Identify the purpose of using eligibility traces in TD learning.	**4**	**2**	**2**
	h).	Differentiate between the forward and backward views of TD(λ).	**4**	**2**	**2**
	i).	Summarize how prioritized sweeping helps in reinforcement learning.	**5**	**2**	**2**
	j).	Classify the differences between full backups and sample backups in RL.	**5**	**2**	**2**
					5 x 10 = 50 Marks
		UNIT-I			
2.	**a).**	Explain the key components of the reinforcement learning framework with an example.	**1**	**2**	**5**
	b).	Describe the n-armed bandit problem and explain how it models the exploration-exploitation trade-off.	**1**	**2**	**5**
		OR			
3.	**a).**	Compare and explain policy iteration and value iteration algorithms with an example.	**1**	**2**	**5**
	b).	What is Generalized Policy Iteration (GPI)? Describe how policy evaluation and improvement are integrated in GPI.	**1**	**2**	**5**
		UNIT-II			
4.	**a).**	Apply value iteration on a 3-state MDP for 2 iterations and show the value updates step by step.	**2**	**3**	**5**
	b).	Given a deterministic MDP with defined states, actions, and rewards,	**2**	**3**	**5**

		implement one cycle of policy improvement.			
		OR			
5.	**a).**	Construct a small MDP problem and demonstrate how asynchronous dynamic programming would update values differently from synchronous methods.	**2**	**3**	**5**
	b).	Given a policy and a value function, use Generalized Policy Iteration (GPI) to update the policy and show the changes	**2**	**3**	**5**
		UNIT-III			
6.	**a).**	Given a small environment and sample episodes, apply Monte Carlo control without exploring starts to improve a policy.	**3**	**3**	**5**
	b).	Using the TD(0) formula, compute the updated value of a state given the current value, reward, and the next state's value.	**3**	**3**	**5**
		OR			
7.	**a).**	Implement the Q-learning algorithm on a simple grid-based environment for 3 iterations and show Q-value updates.	**3**	**3**	**5**
	b).	Explain with an example how after states are used in games like Tic-Tac-Toe to simplify learning using TD methods.	**3**	**3**	**5**
		UNIT-IV			
8.	**a).**	Analyze how the forward view and backward view of TD(λ) are equivalent, and discuss the implications of this equivalence in learning.	**4**	**4**	**5**
	b).	Compare Sarsa(λ) and Watkin's Q(λ) in terms of their learning strategies and performance in on-policy vs. off-policy settings.	**4**	**4**	**5**
		OR			
9.	**a).**	Analyze the role of importance sampling in off-policy eligibility traces and its impact on convergence and stability.	**4**	**4**	**5**
	b).	Evaluate how variable λ affects the bias-variance trade-off in TD learning and analyze its effect on learning speed.	**4**	**4**	**5**
		UNIT-V			
10.	**a).**	Analyze how integrating planning, acting, and learning helps improve the efficiency of reinforcement learning agents. Provide an example scenario.	**5**	**4**	**5**
	b).	Compare and contrast full backups and sample backups. How do they impact learning speed and memory usage in tabular methods?	**5**	**4**	**5**
		OR			
11.	**a).**	Evaluate the advantages of trajectory sampling over traditional planning techniques in large state spaces.	**5**	**4**	**5**
	b).	Analyze the working of Monte Carlo Tree Search (MCTS) and explain how it balances exploration and exploitation in planning	**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: B23CD3206
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		CLOUD COMPUTING			
		For CSIT			
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: B23CT3205
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					**R23**
III B.Tech. II Semester MODEL QUESTION PAPER					
NETWORK PROGRAMMING					
For CSIT					
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 OSI model in network communication?	**1**	**2**	**2**
	b).	List any two differences between TCP and UDP.	**1**	**2**	**2**
	c).	Write a simple TCP socket creation function prototype.	**2**	**3**	**2**
	d).	What is the role of the select() function in I/O multiplexing?	**2**	**3**	**2**
	e).	Compare socket options available in IPv4 and IPv6.	**3**	**4**	**2**
	f).	What is the use of the fcntl() function in sockets?	**3**	**4**	**2**
	g).	Differentiate between a regular process and a daemon process.	**4**	**4**	**2**
	h).	What does syslog() do in daemon programming?	**4**	**4**	**2**
	i).	State two differences between broadcasting and multicasting.	**5**	**4**	**2**
	j).	What is the role of raw sockets in packet crafting?	**5**	**4**	**2**
					5 x 10 = 50 Marks
		UNIT-I			
2.	**a).**	Describe the OSI model and explain the functionality of each layer	**1**	**2**	**5**
	b).	Explain TCP and UDP connection establishment and format with diagrams.	**1**	**2**	**5**
		OR			
3.	**a).**	Discuss socket introduction and elementary TCP sockets.	**1**	**2**	**5**
	b).	Explain the protocol usage by common internet applications.	**1**	**2**	**5**
		UNIT-II			
4.	**a).**	Write and explain a basic TCP Echo server-client program.	**2**	**3**	**5**
	b).	Demonstrate I/O multiplexing using the select() function.	**2**	**3**	**5**
		OR			
5.	**a).**	Explain the steps involved in terminating a TCP server process.	**2**	**3**	**5**
	b).	Illustrate the signal handling mechanism for TCP server crashes.	**2**	**3**	**5**
		UNIT-III			
6.	**a).**	Analyze the behavior of a UDP Echo server in a lossy network.	**3**	**4**	**5**

	b).	Compare the usage of getsockopt() and setsockopt() for TCP sockets.	**3**	**4**	**5**
		OR			
7.	**a).**	Discuss the socket options available for SCTP and ICMPv6.	**3**	**4**	**5**
	b).	How does lack of flow control affect UDP-based communication?	**3**	**4**	**5**
		UNIT-IV			
8.	**a).**	Explain daemon initialization and the role of inetd.	**4**	**4**	**5**
	b).	Describe advanced I/O functions like recvmsg() and sendmsg().	**4**	**4**	**5**
		OR			
9.	**a).**	What are the benefits of socket timeouts? Explain with examples.	**4**	**4**	**5**
	b).	Analyze the use of syslogd daemon for system logging.	**4**	**4**	**5**
		UNIT-V			
10.	**a).**	Compare broadcasting and multicasting on a LAN.	**5**	**4**	**5**
	b).	Explain source-specific multicast and related socket options.	**5**	**4**	**5**
		OR			
11.	**a).**	Describe how raw sockets are used in a ping or traceroute program	**5**	**4**	**5**
	b).	Explain the use of multicast addresses and dg_cli function.	**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: B23CD3209
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		OBJECT ORIENTED ANALYSIS AND DESIGN			
		For CSIT			
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**
		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	**2**	**3**	**5**

		model in UML with a practical example.			
		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 marks

				Course Code: B23CT3207	
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					**R23**
III B.Tech. II Semester MODEL QUESTION PAPER					
DATA VISUALISATION					
For CSIT					
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 meant by mapping data onto aesthetics in data visualization?	**1**	**2**	**2**
	b).	Mention any two types of visualizations suitable for showing proportions and distributions.	**1**	**2**	**2**
	c).	What is the purpose of using a histogram in data visualization?	**2**	**2**	**2**
	d).	Mention any two types of bar plots used for visualizing amounts.	**2**	**2**	**2**
	e).	Mention any two chart types used for visualizing proportions.	**3**	**2**	**2**
	f).	What is the purpose of a scatter plot in visualizing associations?	**3**	**2**	**2**
	g).	What is the purpose of smoothing in visualizing trends?	**4**	**2**	**2**
	h).	What is a choropleth map used for?	**4**	**2**	**2**
	i).	What is the principle of proportional ink in data visualization?	**5**	**2**	**2**
	j).	Mention any two methods used to handle overlapping points in a scatter plot.	**5**	**2**	**2**
				5 x 10 = 50 Marks	
		UNIT-I			
2.	**a).**	Explain how data is mapped onto aesthetics in visualization.	**1**	**2**	**5**
	b).	What are scales in data visualization? How do they map data values onto aesthetics?	**1**	**2**	**5**
		OR			
3.	**a).**	List different coordinate systems used in visualization and explain any one.	**1**	**2**	**5**
	b).	Demonstrate how color can be used in data visualization to distinguish categories, represent values, and highlight important information.	**1**	**3**	**5**
		UNIT-II			
4.	**a).**	Explain the difference between grouped bar plots and stacked bar plots with suitable use cases.	**2**	**2**	**5**
	b).	What is an Empirical Cumulative Distribution Function (ECDF)? How is it used to visualize skewed distributions?	**2**	**2**	**5**
		OR			

5.	**a).**	Describe how histograms and density plots help in visualizing single and multiple distributions.	**2**	**2**	**5**
	b).	Illustrate how multiple distributions can be visualized simultaneously along the vertical and horizontal axes.	**2**	**3**	**5**
		UNIT-III			
6.	**a).**	Explain the difference between pie charts, stacked bars, and side-by-side bars in visualizing proportions.	**3**	**2**	**5**
	b).	What are mosaic plots and treemaps? How do they help in visualizing nested proportions?	**3**	**2**	**5**
		OR			
7.	**a).**	Describe how scatter plots and correlograms are used to show associations among two or more quantitative variables.	**3**	**2**	**5**
	b).	Demonstrate different types of time series visualizations and describe how each one represents change over time.	**3**	**3**	**5**
		UNIT-IV			
8.	**a).**	Explain the role of smoothing and detrending in visualizing time-series trends.	**4**	**2**	**5**
	b).	What are hypothetical outcome plots? How do they help in visualizing uncertainty?	**4**	**2**	**5**
		OR			
9.	**a).**	Describe any two geospatial visualization techniques: projections, layers, choropleth maps, or cartograms.	**4**	**2**	**5**
	b).	Apply three different techniques to visualize uncertainty in data and explain how each technique supports clearer data interpretation.	**4**	**3**	**5**
		UNIT-V			
10.	**a).**	Explain the principle of proportional ink with examples of visualizations using linear and logarithmic axes.	**5**	**2**	**5**
	b).	Implement any two methods such as partial transparency or jittering to resolve overlapping points in a plot. Justify their effectiveness.	**5**	**3**	**5**
		OR			
11.	**a).**	Summarize the common pitfalls of color use in data visualization and how they affect interpretation.	**5**	**2**	**5**
	b).	Use the concept of direct area visualizations to represent a dataset and evaluate whether the visual follows the proportional ink principle.	**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: B23CT3208	
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					**R23**
III B.Tech. II Semester MODEL QUESTION PAPER					
DISTRIBUTED SYSTEMS					
For CSIT					
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 a distributed system and its relation to computer system components.	**1**	**2**	**2**
	b).	Differentiate between synchronous and asynchronous executions in distributed systems.	**1**	**2**	**2**
	c).	Describe the concept of total order in message delivery.	**2**	**2**	**2**
	d).	Explain the importance of group communication in distributed systems.	**2**	**2**	**2**
	e).	Summarize the working of Ricart-Agrawala algorithm for mutual exclusion.	**3**	**2**	**2**
	f).	Describe the idea behind Knapp's classification of deadlocks in distributed systems.	**3**	**2**	**2**
	g).	Explain how coordinated check pointing helps in failure recovery.	**4**	**2**	**2**
	h).	Describe the use of consensus algorithms in synchronous systems with failures.	**4**	**2**	**2**
	i).	Explain the working of Chord protocol in peer-to-peer networks.	**5**	**2**	**2**
	j).	Interpret the role of memory consistency models in distributed shared memory systems.	**5**	**2**	**2**
					5 x 10 = 50 Marks
		UNIT-I			
2	**a).**	Explain the challenges in designing distributed systems.	**1**	**2**	**5**
	b).	Describe the primitives used for distributed communication with examples.	**1**	**2**	**5**
		OR			
3	**a).**	Discuss the concept of logical time using scalar and vector clocks.	**1**	**2**	**5**
	b).	Explain global state, cuts, and past/future cones of an event in distributed systems.	**1**	**2**	**5**
		UNIT-II			
4	**a).**	Explain message ordering paradigms and their relevance in distributed systems.	**2**	**2**	**5**
	b).	Describe the working of snapshot algorithms for FIFO channels with suitable examples.	**2**	**2**	**5**
		OR			

5	**a).**	Discuss causal order and its difference from total order in message delivery.	**2**	**2**	**5**
	b).	Explain the system model and definitions used in snapshot recording algorithms.	**2**	**2**	**5**
		UNIT-III			
6	**a).**	Demonstrate how Maekawa's algorithm reduces the message complexity in distributed mutual exclusion.	**3**	**3**	**5**
	b).	Apply the AND and OR model algorithms to detect deadlocks with a sample scenario.	**3**	**3**	**5**
		OR			
7	**a).**	Use Lamport's algorithm to show how timestamp ordering ensures mutual exclusion.	**3**	**3**	**5**
	b).	Illustrate the process of deadlock detection in a distributed system with a single resource model.	**3**	**3**	**5**
		UNIT-IV			
8	**a).**	Apply log-based rollback recovery technique to recover from process failures in distributed systems.	**4**	**3**	**5**
	b).	Use asynchronous checkpointing to demonstrate its working and advantages with an example.	**4**	**3**	**5**
		OR			
9	**a).**	Illustrate how checkpoint-based recovery mechanisms work in the case of coordinated failures.	**4**	**3**	**5**
	b).	Apply a consensus algorithm in a failure-free system to achieve agreement among distributed processes.	**4**	**3**	**5**
		UNIT-V			
10	**a).**	Apply Content Addressable Networks (CAN) to explain distributed data indexing.	**5**	**3**	**5**
	b).	Demonstrate how Shared Memory Mutual Exclusion is achieved in distributed systems.	**5**	**3**	**5**
		OR			
11	**a).**	Illustrate the working of Tapestry protocol in peer-to-peer overlay networks.	**5**	**3**	**5**
	b).	Use distributed shared memory abstraction to solve synchronization challenges in a multiprocessor system.	**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: B23CT3209	
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		INFORMATION RETRIVAL SYSTEM			
		For CSIT			
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 vector space model and how it represents documents and queries.	**1**	**2**	**2**
	b).	Explain why simple term weights are used in probabilistic retrieval strategies.	**1**	**2**	**2**
	c).	Summarize what relevance feedback is and how it improves search results.	**2**	**2**	**2**
	d).	Define an N-gram and illustrate how it is used in text processing for information retrieval.	**2**	**2**	**2**
	e).	Interpret the concept of a semantic network and how it supports information retrieval	**3**	**2**	**2**
	f).	Clarify what cross-language information retrieval is and state its main goal.	**3**	**2**	**2**
	g).	Explain what an inverted index is and why it is important for efficient information retrieval.	**4**	**2**	**2**
	h).	Describe the purpose of signature files in processing queries.	**4**	**2**	**2**
	i).	Distinguish semi-structured search from unstructured search in information retrieval	**5**	**2**	**2**
	j).	Explain the goal of a theoretical model for distributed information retrieval.	**5**	**2**	**2**
				5 x 10 = 50 Marks	
		UNIT-I			
2.	**a).**	Describe the key components of the vector space model and explain how similarity between a document and a query is calculated.	**1**	**2**	**5**
	b).	Explain the non-binary independence model in probabilistic retrieval strategies, including its basic assumptions about term occurrence.	**1**	**2**	**5**
		OR			
3.	**a).**	Discuss the concept of language models in information retrieval and explain how they estimate the likelihood of a document generating a given query.	**1**	**2**	**5**
	b).	Compare simple term weighting with probabilistic weighting schemes,	**1**	**2**	**5**

		highlighting their advantages and limitations in document ranking.			
		UNIT-II			
4.	**a).**	Given a sample set of documents and an initial query, apply the Rocchio relevance feedback algorithm to calculate a new query vector. Show your calculations step by step.	**2**	**3**	**5**
	b).	Apply clustering techniques to a small set of documents on topics like "machine learning," "deep learning," and "classical statistics," and demonstrate how documents could be grouped for better retrieval.	**2**	**3**	**5**
		OR			
5.	**a).**	Using a thesaurus, show how query expansion can be performed for a user searching for "automobile safety" to retrieve more relevant documents. Explain the rationale behind adding each expanded term	**2**	**3**	**5**
	b).	Given a small dataset of document lengths and their retrieval scores, apply simple linear regression analysis to determine if there is a relationship between document length and relevance score. Show your calculations and interpret the result.	**2**	**3**	**5**
		UNIT-III			
6.	**a).**	Explain the structure and purpose of semantic networks in representing relationships between concepts for information retrieval systems.	**3**	**2**	**5**
	b).	Describe the basic steps involved in parsing natural language text and explain why parsing is important for effective information retrieval	**3**	**2**	**5**
		OR			
7.	**a).**	Discuss the challenges faced in cross-language information retrieval when the query and documents are in different languages, with examples.	**3**	**2**	**5**
	b).	Explain methods used to cross the language barrier in information retrieval systems, such as query translation and multilingual indexing, and describe their advantages and limitations.	**3**	**2**	**5**
		UNIT-IV			
8.	**a).**	Construct an inverted index for the following three documents and show how it can be used to efficiently process the query "retrieval systems": • Doc1: "information retrieval systems" • Doc2: "data retrieval and storage" • Doc3: "retrieval systems in databases"	**4**	**3**	**5**
	b).	Apply a step-by-step process to demonstrate how query processing transforms a user query into a set of matching documents using an inverted index.	**4**	**3**	**5**
		OR			
9.	**a).**	Given a small dataset of documents represented by their binary signatures, apply signature file filtering to process a sample query, and explain how it reduces the search space.	**4**	**3**	**5**

	b).	Using a provided example of two documents, demonstrate how techniques such as shingling or hash-based similarity detection can identify duplicate or near-duplicate documents.	**4**	**3**	**5**
		UNIT-V			
10.	**a).**	Apply the concept of semi-structured search by designing a SQL-like query that retrieves documents from a bibliographic database based on both structured fields (e.g., publication year) and unstructured text (e.g., keywords in abstract).	**5**	**3**	**5**
	b).	Given two distributed search engines indexing overlapping collections, apply the theoretical model of distributed retrieval to outline the steps involved in merging their results into a single ranked list.	**5**	**3**	**5**
		OR			
11.	**a).**	Using a small dataset of structured metadata and text fields, apply the idea of information retrieval as a relational application to show how queries can exploit both structured and unstructured information.	**5**	**3**	**5**
	b).	Design an application scenario where web search integrates structured data (e.g., schema.org annotations) with unstructured page content to enhance search precision. Explain how this integration is applied in practice.	**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