				Course Code: B23CS3101	
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. I Semester MODEL QUESTION PAPER			
		DATA WAREHOUSING AND DATA MINING			
		For CSE			
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 = 20Marks	
			CO	**KL**	**M**
1.	**a).**	Write the differences between data warehousing and data mining.	1	2	2
	b).	Name the steps involved in data mining?	1	2	2
	c).	What does a basic statistical description of a dataset include?	2	2	2
	d).	How do you handle missing data?	2	2	2
	e).	Why is tree pruning useful in decision tree induction?	3	2	2
	f).	What is coverage in rule-based classification?	3	2	2
	g).	Define closed item set and maximal frequent item set.	4	2	2
	h).	How does FP-Growth improve over Apriori?	4	2	2
	i).	Why is cluster analysis important?	5	2	2
	j).	What are the key parameters of DBSCAN?	5	2	2
				5 x 10 =50Marks	
		UNIT-1	**CO**	**KL**	**M**
2.	**a).**	Compare OLAP and OLTP systems	1	2	5
	b).	Illustrate the multitier data warehouse architecture	1	2	5
		OR			
3.	**a).**	A data warehouse can be modeled by either a star schema or a snowflake schema. Briefly describe the similarities and the differences of the two models, and then analyze their advantages and disadvantages with regard to one another. Give your opinion of which might be more empirically useful and state the reasons behind your answer.	1	3	5
	b).	What are the critical challenges and limitations encountered in data mining, and how can they be effectively addressed through emerging technologies and methodologies?	1	3	5
		UNIT-2			
4.	**a).**	Classify the types of attributes that are used to describe data objects	2	3	5
	b).	Discuss about estimating data dissimilarity measures on numeric data? Given two objects represented by the tuples(22,1,42,10) and (20,0,36,8).	2	3	5

<table>
<tr><td></td><td></td><td>a) Compute Euclidean distance between the objects.
b) Compute Manhattan distance between objects.
c) Compute Supremum distance between the objects.</td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td>OR</td><td></td><td></td><td></td></tr>
<tr><td>5.</td><td>a).</td><td>In real-world data, tuples with missing values for some attributes are a common occurrence. Describe various methods for handling this problem</td><td>2</td><td>3</td><td>5</td></tr>
<tr><td></td><td>b).</td><td>Explain about data transformation strategies?
Use these methods to normalize the following group of data:
200,300,400,600,1000
a) min-max normalization by setting min = 0 and max = 1
b) z-score normalization.
c) z-score normalization using the mean absolute deviation instead of standard deviation</td><td>2</td><td>3</td><td>5</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td>UNIT-3</td><td></td><td></td><td></td></tr>
<tr><td>6.</td><td>a).</td><td>Apply decision tree algorithm on the following dataset
<table><tr><th>Day</th><th>Outlook</th><th>Temperature</th><th>Humidity</th><th>Wind</th><th>Response Class
Play=Yes
Play=No</th></tr><tr><td>Day1</td><td>Sunny</td><td>Hot</td><td>High</td><td>Weak</td><td>No</td></tr><tr><td>Day2</td><td>Sunny</td><td>Hot</td><td>High</td><td>Strong</td><td>No</td></tr><tr><td>Day3</td><td>Overcast</td><td>Hot</td><td>High</td><td>Weak</td><td>Yes</td></tr><tr><td>Day4</td><td>Rain</td><td>Mild</td><td>High</td><td>Weak</td><td>Yes</td></tr><tr><td>Day5</td><td>Rain</td><td>Cool</td><td>Normal</td><td>Weak</td><td>Yes</td></tr><tr><td>Day6</td><td>Rain</td><td>Cool</td><td>Normal</td><td>Strong</td><td>No</td></tr><tr><td>Day7</td><td>Overcast</td><td>Cool</td><td>Normal</td><td>Strong</td><td>Yes</td></tr><tr><td>Day8</td><td>Sunny</td><td>Mild</td><td>High</td><td>Weak</td><td>No</td></tr><tr><td>Day9</td><td>Sunny</td><td>Cool</td><td>Normal</td><td>Weak</td><td>Yes</td></tr><tr><td>Day10</td><td>Rain</td><td>Mild</td><td>Normal</td><td>Weak</td><td>Yes</td></tr><tr><td>Day11</td><td>Sunny</td><td>Mild</td><td>Normal</td><td>Strong</td><td>Yes</td></tr><tr><td>Day12</td><td>Overcast</td><td>Mild</td><td>High</td><td>Strong</td><td>Yes</td></tr><tr><td>Day13</td><td>Overcast</td><td>Hot</td><td>Normal</td><td>Weak</td><td>Yes</td></tr><tr><td>Day14</td><td>Rain</td><td>Mild</td><td>High</td><td>Strong</td><td>No</td></tr></table></td><td>3</td><td>3</td><td>5</td></tr>
<tr><td></td><td>b).</td><td>Demonstrate the different attribute selection measures</td><td>3</td><td>3</td><td>5</td></tr>
<tr><td></td><td></td><td>OR</td><td></td><td></td><td></td></tr>
<tr><td>7.</td><td>a).</td><td>Apply Naïve Bayes on the following binary classification problem
<table><tr><th>Color</th><th>Type</th><th>Origin</th><th>Stolen ?</th></tr><tr><td>Red</td><td>Sports</td><td>Domestic</td><td>Yes</td></tr><tr><td>Red</td><td>Sports</td><td>Domestic</td><td>No</td></tr><tr><td>Red</td><td>Sports</td><td>Domestic</td><td>Yes</td></tr><tr><td>Yellow</td><td>Sports</td><td>Domestic</td><td>No</td></tr><tr><td>Yellow</td><td>Sports</td><td>Imported</td><td>Yes</td></tr><tr><td>Yellow</td><td>SUV</td><td>Imported</td><td>No</td></tr><tr><td>Yellow</td><td>SUV</td><td>Imported</td><td>Yes</td></tr><tr><td>Yellow</td><td>SUV</td><td>Domestic</td><td>No</td></tr><tr><td>Red</td><td>SUV</td><td>Imported</td><td>No</td></tr><tr><td>Red</td><td>Sports</td><td>Imported</td><td>Yes</td></tr></table></td><td>3</td><td>3</td><td>5</td></tr>
</table>

<table>
<tr><td></td><td></td><td>Classify whether the following automobile is stolen or not?
(Color=”Red”, Type=”SUV”, Origin=”Domestic”, Stolen=?)</td><td></td><td></td><td></td></tr>
<tr><td></td><td>b).</td><td>Discuss the different methods used for evaluating the performance of a classifier</td><td>3</td><td>3</td><td>5</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td>UNIT-4</td><td></td><td></td><td></td></tr>
<tr><td>8.</td><td>a).</td><td>Consider the following transactions. Consider min_sup=60% and min_conf=80%. Find all frequent itemsets using Apriori algorithm.
<table><tr><td>TID</td><td>Items Bought</td></tr><tr><td>T100</td><td>{I1,I2,I3,I4,I5,I6}</td></tr><tr><td>T200</td><td>{I8,I3,I4,I5,I6}</td></tr><tr><td>T300</td><td>{I1,I7,I4,I5}</td></tr><tr><td>T400</td><td>{I1,I7,I8,I4,I6}</td></tr><tr><td>T500</td><td>{I8,I2,I2,I4,I5,I6}</td></tr></table></td><td>4</td><td>3</td><td>5</td></tr>
<tr><td></td><td>b).</td><td>Discuss about pattern mining in multidimensional and multilevel association?</td><td>4</td><td>3</td><td>5</td></tr>
<tr><td></td><td></td><td>OR</td><td></td><td></td><td></td></tr>
<tr><td>9.</td><td>a).</td><td>Analyze the significance of association analysis in the context of market basket analysis.</td><td>4</td><td>3</td><td>5</td></tr>
<tr><td></td><td>b).</td><td>Demonstrate FP Growth algorithm with an example.</td><td>4</td><td>3</td><td>5</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td>UNIT-5</td><td></td><td></td><td></td></tr>
<tr><td>10.</td><td>a).</td><td>Discuss the different types of data involved in cluster analysis.</td><td>5</td><td>3</td><td>5</td></tr>
<tr><td></td><td>b).</td><td>Consider that the data mining task is to cluster the following seven points P1, P2, P3, P4, P5, P6, P7 into two clusters. P1 (1,1), P2 (2,2), P3 (3,4), P4 (5,7), P5 (3,5), P6 (4,5) and P7(4,6). The distance function is Euclidean distance. Apply K-means algorithm with two iterations to form two clusters by taking the initial cluster centers as points P1 and P4</td><td>5</td><td>3</td><td>5</td></tr>
<tr><td></td><td></td><td>OR</td><td></td><td></td><td></td></tr>
<tr><td>11.</td><td>a).</td><td>Compare the strengths and weaknesses of K-Means, Agglomerative Hierarchical Clustering and DBSCAN</td><td>5</td><td>2</td><td>5</td></tr>
<tr><td></td><td>b).</td><td>Demonstrate DBSCAN algorithm with an example</td><td>5</td><td>3</td><td>5</td></tr>
</table>

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

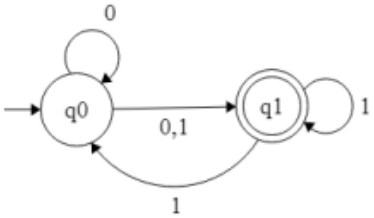
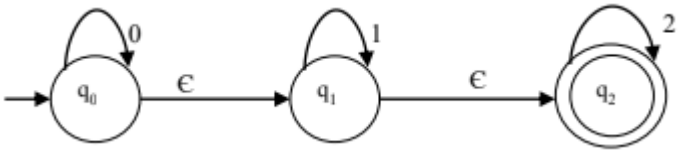
NOTE : Questions can be given as A,B splits or as a single Question for 10 marks

					Course Code: B23CS3102
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. I Semester MODEL QUESTION PAPER			
		COMPUTER NETWORKS			
		For CSE			
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 protocol? Explain types of networks	1	2	2
	b).	Describe various network topologies.	1	2	2
	c).	List of the services provided by data link layer	2	3	2
	d).	Define flow control in Data Link Layer	2	3	2
	e).	Explain ALOHA and types of ALOHA	3	3	2
	f).	Define the following: a)CSMA b) CSMA/CD c)CSMA/CA	3	3	2
	g).	Rewrite the following IP addresses in binary and identify their classes i. 192.168.2.15 ii. 245.126.45.96 3 3 2	4	2	2
	h).	What is ICMP and its purpose?	4	2	2
	i).	Distinguish between connection-less and connection-oriented protocol in transport layer?	5	2	2
	j).	Explain the function of DNS in the application layer.	5	2	2
					5 x 10 = 50 Marks
		UNIT-1			
2.	**a).**	Draw the OSI layer and explain the functionalities of each layer in detail.	1	2	5
	b).	Difference between analog signal and digital signal in the physical layer	1	3	5
		OR			
3.	**a).**	Explain the layers of TCP/IP (or) Internet architecture in detail.	1	2	5
	b).	Discuss about various Guided media	1	3	5
		UNIT-2			
4.	**a).**	Explain error detection & Correction methods in detail with example	2	3	10
		OR			
5.	**a).**	Illustrate various flow control mechanisms or reliable transmission.	2	3	10
		UNIT-3			

6.	**a).**	Discuss CSMA/CD protocol	3	2	5
	b).	Compare Fast Ethernet and Gigabit Ethernet	3	3	5
		OR			
7.	**a).**	Explain about the token ring mechanism in detail.	3	2	5
	b).	Illustrate the process of channelization in FDMA and its application in communication networks	3	3	5
		UNIT-4			
8.	**a).**	Illustrate the IPV4 header with a neat diagram	4	3	5
	b).	Demonstrate about the Distance Vector Routing Algorithm with example	4	3	5
		OR			
9.	**a).**	In a block of addresses, we know the IP address of one host is 25.34.12.56/16. i. What are the first address (network address) ii. The last address (limited broadcast address) in this block? iii. Find the number of addresses	4	3	10
		UNIT-5			
10.	**a).**	Describe about the congestion control algorithms	5	3	5
	b).	Define UDP Datagram and Explain the UDP frame format?	5	3	5
		OR			
11.	**a).**	Describe SMTP, FTP protocols.	5	2	5
	b).	Discuss about Following Application layers protocols a) DNS b) b)HTTP	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: B23CS3103
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. I Semester MODEL QUESTION PAPER			
		FORMAL LANGUAGES AND AUTOMATA THEORY			
		For CSE			
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).**	Construct DFA to accept set of all strings over {0,1} and having even zero's and even one's	1	3	2
	b).	Differentiate DFA and NFA	1	2	2
	c).	Construct regular expression to denote set of strings set of all strings beginning with 01 and ending with 10	2	3	2
	d).	Differentiate regular grammar and context free grammar.	2	2	2
	e).	Construct Context free grammar for generating all palindrome strings	3	3	2
	f).	Differentiate unit productions and epsilon productions with an example for each	3	2	2
	g).	Define PDA and ID of PDA	4	1	2
	h).	Explain acceptance of strings in PDA	4	2	2
	i).	Define Turing Machine and ID of TM	5	1	2
	j).	Differentiate P and NP	5	2	2
					5 x 10 =50Marks
		UNIT-1			
2.	**a).**	Construct DFA from the following NFA 	1	3	5
	b).	Explain about the State minimization with an example	1	3	5
		OR			
3.	**a).**	Construct NFA from the following ε-NFA 	1	3	5
	b).	Differentiate Mealy and Moore machines, give an example for each.	1	2	5

		UNIT-2			
4.	**a).**	Construct NFA with ϵ moves equivalent to the RE (ab + aab)*	2	3	5
	b).	Explain about Chomsky hierarchy	2	2	5
		OR			
5.	**a).**	Apply pumping lemma to show the set of all even length palindrome strings is not regular.	2	3	5
	b).	Explain different closure properties of regular sets	2	2	5
		UNIT-3			
6.	**a).**	Construct LMD and RMD for the string abba from the CFG S→aSbS / bSaS / ε	3	2	5
	b).	Show that the following CFG is ambiguous, construct parse trees for the ambiguous string. S→S+S/ S*S/a/b	3	2	5
		OR			
7.	**a).**	Apply pumping lemma on CFL to prove the following language is not CFL L= $\{a^n b^n c^n / n>=1\}$	3	3	5
	b).	Convert the following CFG to CNF S → aSa / bSb / a / b	3	2	5
		UNIT-4			
8.	**a).**	Construct PDA for recognizing the Context free language L= $\{a^n c b^n / n>=1\}$	4	3	10
		OR			
9.	**a).**	Construct PDA for recognizing the Context free language L= $\{WcW^R / W$ is binary string$\}$ and demonstrate how the string 01c10 is accepted by PDA	4	3	10
		UNIT-5			
10.	**a).**	Construct a TM for L= $\{a^n b^n / n>=1\}$ and demonstrate how aabb string is accepted by TM	5	3	10
		OR			
11.	**a).**	Explain about PCP with neat example	5	2	5
	b).	Explain about decidable and un decidable problems	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: B23CS3104	
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					**R23**
III B.Tech. I Semester MODEL QUESTION PAPER					
OBJECT ORIENTED ANALYSIS AND DESIGN					
For CSE					
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)**	Briefly explain the importance of modeling in OOAD.	1	2	2
	b)	Illustrate stereo types in UML.	1	2	2
	c)	What are the different types of relationships used in class diagrams?	2	1	2
	d)	Explain associations in class diagrams.	2	2	2
	e)	Illustrate interfaces in OO design?	3	2	2
	f)	Compare Object Diagrams and Class Diagrams.	3	2	2
	g)	What are Use Cases in UML?	4	1	2
	h)	What are swim lanes in activity diagrams?	4	1	2
	i)	Explain in brief the significance of state machines in behavioral modeling.	5	2	2
	j)	Illustrate components in deployment modeling?	5	3	2
				5 x 10 = 50 Marks	
		UNIT-1			
2.		Demonstrate the use of structural things in UML with examples.	1	3	10
		OR			
3.		How do you use modeling in Analysis and Design?	1	3	10
		UNIT-2			
4.	**a)**	Demonstrate different types of class relationships with examples.	2	3	5
	b)	Apply class diagrams to Student Information System.	2	3	5
		OR			
5.	**a)**	How do you use common mechanisms in UML?	2	3	5
	b)	Demonstrate the components and notation in class diagrams.	2	3	5
		UNIT-3			
6.		Apply Object Diagrams and Class diagrams for designing a Human Resource Management System.	3	3	10

		OR			
7.		Use UML package diagram to organize the modules of a large-scale enterprise system. Show how you group classes into packages and discuss the significance of visibility and dependency relationships between packages.	3	3	10
		UNIT-4			
8.	**a)**	Draw a Use Case Diagram for an Order Management System.	4	3	5
	b)	Demonstrate the flow of activities in Activity Diagrams with an example.	4	3	5
		OR			
9.	**a)**	Demonstrate the use of sequence diagrams in UML.	4	3	5
	b)	Apply the steps for identifying use cases for any problem of your choice.	4	3	5
		UNIT-5			
10.	**a)**	Demonstrate state chart diagrams with a suitable example.	5	3	5
	b)	Draw a deployment diagram for a Vacation Tracking Web Application.	5	3	5
		OR			
11.	**a)**	Demonstrate processes and threads in UML modeling.	5	3	5
	b)	Apply component diagram for a real-time 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: B23CS3105
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. I Semester MODEL QUESTION PAPER			
		ARTIFICIAL INTELLIGENCE			
		For CSE			
Time: 3 Hrs.					**Max. Marks: 70 M**
		Answer Question No.1 compulsorily			
		Answer **ONE** Questions from **EACH UNIT**			
		Assume suitable data if necessary			
					10 x 2 = 20 Marks
			CO	**KL**	**M**
1.	**a).**	List out Domains of AI?	1	2	2
	b).	Explain structure of agents in AI.	1	2	2
	c).	What is Heuristic function?	2	3	2
	d).	Differentiate BFS and DFS strategies.	2	3	2
	e).	Explain about frames in semantic nets.	3	2	2
	f).	Differentiate ISA and Instance attributes in semantic nets	3	2	2
	g).	Explain forward changing?	4	2	2
	h).	Define clause, give an example	4	2	2
	i).	List any two advantages and disadvantages of Expert systems	5	2	2
	j).	Explain Reinforcement learning	5	2	2
					5 x 10 = 50 Marks
		UNIT-1			
2.	**a).**	Explain about different problem characteristics of AI problems.	1	2	5
	b).	Explain about water jug problem and suggest a suitable solution to water jug problem.	1	3	5
		OR			
3.	**a).**	Explain different Problem solving agents in AI	1	3	5
	b).	Describe the state space representation to solve TSP	1	3	5
		UNIT-2			
4.	**a).**	Explain A* algorithm and Apply A* algorithm to solve 8 puzzle problem	2	3	10
		OR			
5.	**a).**	Explain Hill climbing algorithm.	2	2	5
	b).	Explain AO * algorithm.	2	3	5
		UNIT-3			
6.	**a).**	Represent the following facts using Partitioned Semantic Nets: a. The dog bite the mail carrier	3	3	5

		b. Every batter hit every bowler			
	b).	Represent the following facts in Conceptual Dependency : a. John gave the AI book to marry. b. John punched marry.	3	2	5
		OR			
7.	**a).**	How do you represent visiting a restaurant in the form of a Script?	3	3	10
		UNIT-4			
8.	**a).**	Explain Unification algorithm and Apply unification algorithm to the following : a. Like(john, x) Hate (john, x) b. Like (Marcus, Caesar, john) and Like(x, y) c. Like (john, kate) and Like (x, kate)	4	3	5
	b).	Explain the steps involved in converting WFF to Clause	4	3	5
		OR			
9.	**a).**	Apply the Resolution algorithm to Prove that: "John likes peanuts" , From the following facts: a. John likes all kind of food. b. Apple and vegetable are food. c. Anything anyone eats and not killed is food. d. Anil eats peanuts and still alive. e. Harry eats everything that Anil eats.	4	3	5
	b).	Explain about alpha-beta pruning.	4	3	5
		UNIT-5			
10.	**a).**	Define Machine Learning? Explain different types of ML Algorithms	5	3	10
		OR			
11.	**a).**	Explain the architecture of the Expert system.	5	2	5
	b).	Explain Roles of Expert 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: B23CS3106
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. I Semester MODEL QUESTION PAPER			
		MICROPROCESSORS & MICROCONTROLLERS			
		For CSE			
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 role of BIU and EU in 8086 architecture.	1	2	2
	b).	Describe the purpose of the MN/MX pin in 8086.	1	2	2
	c).	Use MOV instruction to transfer data from memory to register.	2	3	2
	d).	Apply the XLAT instruction for character conversion.	2	3	2
	e).	Define the function of control word in 8255 PPI.	3	2	2
	f).	Explain the role of 8257 DMA controller in interfacing.	3	2	2
	g).	Identify the role of TXD and RXD in serial communication.	4	3	2
	h).	Apply the USART 8251 in a serial data transmission system.	4	3	2
	i).	Use an instruction to move data between two registers in 8051.	5	3	2
	j).	Identify the role of CPSR in ARM processors.	5	3	2
					5 x 10 = 50 Marks
		UNIT-1			
2.	**a).**	Summarize the different addressing modes used in 8086 microprocessors with suitable examples.	1	2	5
	b).	Classify the different types of instructions in the 8086-instruction set.	1	2	5
		OR			
3.	**a).**	Illustrate the function of various pins of 8086 in maximum mode.	1	2	5
	b).	Explain the segmented memory structure of 8086 with an example.	1	2	5
		UNIT-2			
4.	**a).**	Implement an assembly program to multiply two 16-bit numbers using 8086 instructions.	2	3	5
	b).	Develop an assembly language program for BCD to binary conversion.	2	3	5
		OR			
5.	**a).**	Write an assembly program to count the number of vowels in a string.	2	3	5
	b).	Apply assembler directives such as ORG, EQU, and END in a small program example.	2	3	5

		UNIT-3			
6.	**a).**	Compare the working of Mode 0 and Mode 1 in 8255 PPI.	3	2	5
	b).	Discuss the control and status signals used in 8257 DMA controller.	3	2	5
		OR			
7.	**a).**	Explain the interfacing of an ADC with 8086 using control signals.	3	2	5
		UNIT-4			
8.	**a).**	Design a serial communication system using RS-232 standard and 8251 USART.	4	3	5
	b).	Write a program to transmit a string serially using 8086 and 8251.	4	3	5
		OR			
9.	**a).**	Construct the initialization routine for 8251 USART to enable asynchronous mode.	4	3	5
	b).	Demonstrate the interfacing of modem with 8086 microprocessor using 8251.	4	3	5
		UNIT-5			
10.	**a).**	Write an 8051 program to toggle an LED connected to Port 1 using Timer interrupt.	5	3	5
	b).	Implement a delay using Timer 1 in 8051 and explain each step.	5	3	5
		OR			
11.	**a).**	Develop an 8051 program to transmit data through the serial port using polling method.	5	3	5
	b).	Design a program to read a switch status and control a motor using 8051 microcontroller.	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: B23CS3107	
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					**R23**
III B.Tech. II Semester MODEL QUESTION PAPER					
SOFTWARE TESTING METHODOLOGIES					
For CSE					
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 testing	1	2	2
	b).	Summarize predicates	1	2	2
	c).	Describe transaction flows	2	2	2
	d).	Demonstrate domain testing	2	3	2
	e).	Summarize path products	3	2	2
	f).	Summarize path expressions	3	3	2
	g).	Explain state graphs	4	2	2
	h).	Describe Transition testing	4	2	2
	i).	Describe relations	5	2	2
	j).	Explain building tools	5	2	2
				5 x 10 = 50 Marks	
		UNIT-1			
2.	**a).**	Describe model for testing	1	2	5
	b).	Explain about consequences of bugs	1	2	5
		OR			
3.	**a).**	Compare path predicates and achievable paths	1	2	5
	b).	Summarize application of path testing	1	2	5
		UNIT-2			
4.	**a).**	Explain transaction flow testing techniques	2	2	5
	b).	summarize domains and testability	2	2	5
		OR			
5.	**a).**	Describe application of data flow testing	2	2	5
	b).	Compare domains and interfaces testing	2	2	5
		UNIT-3			
6.	**a).**	Demonstrate reduction procedure	3	3	5

	b).	Explain KV charts	3	2	5
		OR			
7.	**a).**	Demonstrate decision tables	3	3	5
	b).	Describe flow anomaly detection	3	2	5
		UNIT-4			
8.	**a).**	Describe state testing	4	2	5
	b).	Explain good state graphs	4	2	5
		OR			
9.	**a).**	summarize Testability tips	4	2	5
	b).	Explain bad state graphs	4	2	5
		UNIT-5			
10.	**a).**	Describe matrix of graph	5	2	5
	b).	Demonstrate node reduction algorithm	5	3	5
		OR			
11.	**a).**	Demonstrate power of a matrix	5	3	5
	b).	Describe Graph Matrix Application	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: B23CS3201
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		COMPILER DESIGN			
		For CSE			
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).**	Differentiate compiler and interpreter	1	2	2
	b).	What are different tokens? Give examples	1	2	2
	c).	Differentiate top down and bottom up parsers	2	2	2
	d).	Differentiate LR(0) item and LR(1) item	2	2	2
	e).	Explain about SDD	3	2	2
	f).	Explain back patching	3	2	2
	g).	What is Basic block?	4	1	2
	h).	What is reduction in strength?	4	1	2
	i).	Differentiate intermediate code and machine code	5	2	2
	j).	Write about Code Generation Algorithm.	5	2	2
					5 x 10 =50Marks
		UNIT-1			
2.	**a).**	Draw a diagram for phases of a compiler and explain the main functions of each phase for the following statement position = initial + rate * 45.	1	3	10
		OR			
3.	**a).**	Explain Specification and Recognition of Tokens.	1	2	5
	b).	Explain in detail about Lexical Analyzer Generator (LEX).	1	2	5
		UNIT-2			
4.	**a).**	Explain the working of Predictive parser. Construct Predictive parsing table for the following CFG $S \rightarrow iEtSS^1/a$ $S^1 \rightarrow eS/ \varepsilon$ $E \rightarrow b$	2	3	10
		OR			
5.	**a).**	Explain how SLR parser operates, Construct SLR parsing table for the grammar	2	3	10

		S→AA A→aA/b			
		UNIT-3			
6.	**a).**	Explain about the evaluation order for SDD	3	2	5
	b).	Translate the expression a = (b * -c)+(b * -c) into Quadruples, triples and indirect triples.	3	3	5
		OR			
7.	**a).**	Explain how syntax-directed translation handles array references within arithmetic expressions.	3	2	5
	b).	Explain about type checking.	3	2	5
		UNIT-4			
8.	**a).**	Explain different principle sources of optimization	4	2	5
	b).	Explain code optimization using basic blocks and flow graphs	4	2	5
		OR			
9.	**a).**	Explain about peephole optimization	4	2	5
	b).	Discuss in detail about global data flow analysis	4	2	5
		UNIT-5			
10.	**a).**	Discuss about the runtime storage management of a code generator in detail.	5	2	5
	b).	What is an activation record? Draw diagram of general activation record and explain the purpose of different fields of an activation record.	5	2	5
		OR			
11.	**a).**	What are the issues in the design of a code generator? Explain with example.	5	2	5
	b).	Explain in detail about register allocation and assignment.	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: B23CS3202
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		CLOUD COMPUTING			
		For CSE			
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 cloud computing?	1	1	2
	b).	List any two advantages of cloud computing.	1	1	2
	c).	What is the role of Remote Procedure Call (RPC) in distributed systems?	2	1	2
	d).	Define parallel computing.	2	1	2
	e).	Mention one advantage and one disadvantage of virtualization	3	1	2
	f).	List any two characteristics of a virtualized environment.	3	1	2
	g).	Define cloud interoperability in cloud computing	4	1	2
	h).	Name two methods used to improve energy efficiency in cloud data centers.	4	1	2
	i).	Differentiate between serverless and traditional server-based computing	5	2	2
	j).	Name one public cloud and one open-source platform for serverless computing.	5	1	2
					5 x 10 = 50 Marks
		UNIT-1			
2.	**a).**	Explain the types of cloud service models with suitable example for each.	1	2	10
		OR			
3.	**a).**	Explain the cloud computing reference model in detail, describing each abstraction layer and its function.	1	2	10
		UNIT-2			
4.	**a)**	Explain the architecture types: SISD, SIMD, MISD, and MIMD. Provide examples of each.	2	2	10
		OR			
5.	**a).**	Discuss how Inter-Process Communication (IPC) and Remote Procedure Call (RPC) facilitate distributed computing.	2	2	5
	b).	Describe the role of virtualization, SOA, and web services as enabling technologies for the cloud. How do they support scalability and interoperability?	2	2	5

		UNIT-3			
6.	**a)**	Explain, with examples, the taxonomy of virtualization techniques (hardware, OS, server, network, storage, application virtualization)	3	2	10
		OR			
7.	**a).**	Describe in detail the working of Amazon Elastic Container Service and how it differs from VM-based services like EC2.	3	2	5
	b).	Briefly describe the taxonomy of virtualization techniques, mentioning Type 1 and Type 2 hypervisors and their key differences.	3	2	5
		UNIT-4			
8.	**a).**	Explain how cloud scalability and fault tolerance improve service availability for enterprise applications.	4	2	10
		OR			
9.	**a).**	Explain the concept of federated clouds. What challenges do they address and introduce?	4	2	5
	b).	Describe the cloud security architecture. Discuss how security varies across different deployment models (public, private, hybrid).	4	2	5
		UNIT-5			
10.	**a).**	Explain how event-driven execution works in serverless platforms.	5	2	5
	b).	Describe the architecture of Function-as-a-Service (FaaS) with examples such as AWS Lambda and OpenFaaS.	5	2	5
		OR			
11.	**a).**	Discuss the role of edge and fog computing in extending the benefits of serverless architectures	5	2	10

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: B23CS3203
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					**R23**
III B.Tech. II Semester MODEL QUESTION PAPER					
CRYPTOGRAPHY & NETWORK SECURITY					
For CSE					
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).**	Differentiate encryption and decryption	1	2	2
	b).	Differentiate confidentiality and authentication	1	2	2
	c).	Differentiate DES and AES with feature of Key size and Block size	2	2	2
	d).	Differentiate block cipher and stream cipher	2	2	2
	e).	Why are large prime numbers essential in asymmetric key cryptography like RSA?	3	2	2
	f).	Determine $\phi(35)$ and $\phi(37)$	3	2	2
	g).	What is the role of a cryptographic hash function in ensuring message integrity?	4	2	2
	h).	What is a digital signature and what services does it provide?	4	2	2
	i).	Differentiate Transport Mode and Tunnel Mode	5	2	2
	j).	How does a firewall protect a network?	5	2	2
					5 x 10 =50Marks
		UNIT-1			
2.	**a).**	Explain about different security goals in cryptography	1	2	5
		Differentiate Active attacks and Passive attacks.	1	2	5
		OR			
3.	**a).**	Explain about different Cryptographic services and Mechanisms to implement these cryptographic services.	1	2	5
	b).	Differentiate Known plaint text attack and Chosen plain text attack	1	2	5
		UNIT-2			
4.	**a).**	Explain in detail about Data Encryption Standard algorithm	2	2	10
		OR			
5.	**a).**	Explain the structure of AES algorithm with neat diagram and describe the steps in AES encryption, AES key generation	2	2	10
		UNIT-3			
6.	**a).**	What is the Chinese Remainder Theorem (CRT), and how is it used in	3	3	5

		optimizing RSA decryption? Provide an example.			
	b).	Explain the Rabin cryptosystem and compare it with RSA.	3	2	5
		OR			
7.	**a).**	Apply RSA algorithm to perform Encryption and Decryption for p=17,q=11,e=7,M=8	3	3	5
	b).	Describe the ElGamal cryptosystem with its mathematical foundations.	3	2	5
		UNIT-4			
8.	**a).**	List and explain various steps of SHA in detail with neat diagram	4	2	10
		OR			
9.	**a).**	Explain about symmetric key distribution	4	2	5
	b).	Apply DiffieHellman Key exchange algorithm to find the secret key shared between User A and User B using for the following: q=11, a=2, the private keys XA=6, XB =8.	4	3	5
		UNIT-5			
10.	**a).**	Discuss the key components and functioning of IPSec, including its protocols	5	2	5
	b).	Describe the architecture and functioning of SSL/TLS	5	2	5
		OR			
11.	**a).**	What is a Trusted System, and how does it enforce security policies?	5	2	5
	b).	Explain the lifecycle and working of a computer virus.	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:B23CS3204
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		QUANTUM COMPUTING			
		For CSE			
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 Vector Space	1	1	2
	b).	What is Adjoint Operator and Joint operator?	1	1	2
	c).	Describe Superposition of States.	2	2	2
	d).	State the matrix (or vector) representation of a single qubit in the $\|+\rangle$state	2	1	2
	e).	Explain universal sets of quantum gates	3	2	2
	f).	Define Controlled-U Gate	3	1	2
	g).	Illustrate Spin Qubits	4	2	2
	h).	Summarize the main idea of the Quantum Fourier Transform (QFT).	4	2	2
	i).	Briefly explain the purpose of any two quantum programming libraries	5	2	2
	j).	Explain the purpose of the Steane code in quantum error correction.	5	2	2
					5 x 10 = 50 Marks
		UNIT-1			
2.		Explain Classical Electromagnetic Theory, Rutherford's Model of the Atom and Bohr's Model of Atoms.	1	2	10
		OR			
3.	**a).**	Describe the postulates of quantum mechanics.	1	2	5
	b).	Illustrate Dirac notation and Wave function with an example	1	2	5
		UNIT-2			
4.	**a).**	Describe quantum unary and binary operators in detail.	2	2	5
	b).	Explain EPR Paradox & Bell Theorem.	2	2	5
		OR			
5.	**a).**	Explain how to represent and measure Qubitin detail.	2	2	5
	b).	Illustrate no cloning theorem.	2	2	5
		UNIT-3			
6.	**a).**	Explain how to analyze Two-qubit gates with an example	3	2	5

	b).	Demonstrate the working of a quantum adder using basic quantum gates	3	3	5
		OR			
7.	**a).**	Apply the cascade of X → H → Z gates on the initial state |0⟩ and show the resulting state vector.	3	3	5
	b).	Compare classical logic gates and quantum gates	3	2	5
		UNIT-4			
8.	**a).**	Explain Photonics and Semiconductor quantum transistor.	4	2	5
	b).	Describe about Shor's algorithm.	4	2	5
		OR			
9.	**a).**	Compare and contrast spin qubit and super conducting qubit?	4	2	5
	b).	Illustrate Grover algorithm.	4	2	5
		UNIT-5			
10.	**a).**	Compare the working principles and error-correcting capabilities of Shor's bit-flip and phase-flip codes.	5	2	5
	b).	Explain the various applications of Qiskit in quantum computing.	5	2	5
		OR			
11.	**a).**	Analyze the key differences between quantum computers and quantum circuit simulators with examples.	5	4	5
	b).	Explain Unique challenges in Quantum Error Correction.	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: B23CS3205
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		MOBLILE ADHOC NETWORKS			
		For CSE			
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 MANET and list any four of its applications.	1	1	2
	b).	What are the design goals of MAC protocols in Ad Hoc networks?	1	1	2
	c).	Compare topology-based and position-based routing protocols in Ad Hoc networks.	2	2	2
	d).	Summarize the key goals considered while designing routing protocols for MANETs.	2	2	2
	e).	List any four security requirements in Ad Hoc networks.	3	1	2
	f).	What is cooperation in MANETs and why is it needed?	3	1	2
	g).	Explain any two design issues in Wireless Sensor Networks.	4	2	2
	h).	Compare energy consumption in sensing vs. communication tasks in WSNs.	4	2	2
	i).	Explain the importance of secure data aggregation in Wireless Sensor Networks.	5	2	2
	j).	Contrast TinyOS and RETOS in terms of their features and usage in WSNs.	5	2	2
					5 x 10 = 50 Marks
		UNIT-1			
2.	**a).**	Explain the fundamental characteristics of Ad Hoc Wireless Networks.	1	2	5
	b).	Describe various challenges and design considerations in MANETs.	1	2	5
		OR			
3.	**a).**	Illustrate the classifications of MAC protocols in Ad Hoc Wireless Networks.	1	2	5
	b).	Compare Cellular Networks with Ad Hoc Wireless Networks with examples.	1	2	5
		UNIT-2			
4.	**a).**	Apply your understanding of Ad Hoc networks to identify and explain how key design issues affect the performance of routing protocols.	2	3	5
	b).	Demonstrate how different transport layer solutions handle congestion and reliability in a highly mobile Ad Hoc network.	2	3	5

		OR			
5.	**a).**	Solve the problem of high end-to-end delay in MANETs by selecting an appropriate transport layer protocol. Justify your choice based on transport protocol features.	2	3	5
	b).	Compute the expected performance impact (in terms of packet loss or delay) when using TCP over a MANET and suggest a more efficient alternative.	2	3	5
		UNIT-3			
6.	**a).**	Apply suitable key management techniques to enable secure communication between nodes in a MANET. Justify your choice.	3	3	5
	b).	Use a secure routing mechanism to prevent black hole or wormhole attacks in an Ad Hoc network scenario. Explain how it works.	3	3	5
		OR			
7.	**a).**	Find a suitable Intrusion Detection System (IDS) approach that can detect misbehavior in MANETs. Explain its working in brief.	3	3	5
	b).	Demonstrate how cooperation enforcement mechanisms can reduce selfish behaviour in MANETs.	3	3	5
		UNIT-4			
8.	**a).**	Explain the architecture and functionalities of the Mica Mote used in Wireless Sensor Networks.	4	2	5
	b).	Discuss clustering and energy consumption issues in Wireless Sensor Networks.	4	2	5
		OR			
9.	**a).**	Explain the classification of WSNs with respect to MAC, routing, and transport layers.	4	2	5
	b).	Describe how energy consumption affects the performance of sensor nodes in WSNs.	4	2	5
		UNIT-5			
10.	**a).**	Explain the importance of key management principles in designing secure communication for clustered wireless sensor networks.	5	2	5
	b).	Describe the process of secure data aggregation in a wireless sensor network and mention any one simulation tool that can be used (e.g., NS-2 or TOSSIM).	5	2	5
		OR			
11.	**a).**	Interpret the requirements of a healthcare monitoring system and describe which WSN operating system (TinyOS, SOS, or RETOS) is more suitable, with justification.	5	2	5
	b).	Compare TinyOS, SOS, and RETOS based on their features relevant to wireless sensor network 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: B23CS3206
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		DEVOPS			
		For CSE			
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 how DevOps improves collaboration between development and ops.	1	2	2
	b).	Explain the concept of value stream mapping in DevOps lifecycle.	1	2	2
	c).	Apply Git workflow for version control in collaborative development.	2	3	2
	d).	Demonstrate the role of automated testing using JUnit or Selenium.	2	3	2
	e).	Use Jenkins plugins to automate build tasks.	3	3	2
	f).	Categorize the stages in Jenkins pipeline (Declarative vs Scripted).	3	4	2
	g).	Infer the use of Docker images and containers in CI/CD.	4	4	2
	h).	Compare Kubernetes services and ReplicaSets.	4	2	2
	i).	Illustrate the structure of an Ansible playbook.	5	3	2
	j).	Analyze how configuration management supports deployment consistency.	5	4	2
					5 x 10 = 50 Marks
		UNIT-1			
2.	**a).**	Explain how Agile methodology aligns with DevOps principles.	1	2	5
	b).	Apply DevOps architecture to streamline a software release process.	1	3	5
		OR			
3.	**a).**	Use value stream mapping to identify bottlenecks in a CI/CD pipeline.	1	3	5
	b).	Categorize the phases in a DevOps lifecycle and their significance.	1	4	5
		UNIT-2			
4.	**a).**	Apply Git branching and merging techniques in a version-controlled project.	2	3	5
	b).	Categorize the differences between unit testing and test automation.	2	4	5
		OR			
5.	**a).**	Demonstrate how SonarQube enhances code quality in DevOps.	2	3	5
	b).	Analyze the integration of Selenium and Git for automated testing.	2	4	5

		UNIT-3			
6.	**a).**	Apply Jenkins to automate build and test processes.	3	3	5
	b).	Infer the architectural roles of Jenkins master and agent nodes.	3	4	5
		OR			
7.	**a).**	Use Jenkins pipeline scripts to build a CI workflow.	3	3	5
	b).	Categorize different build triggers and their importance in Jenkins.	3	4	5
		UNIT-4			
8.	**a).**	Apply Docker to deploy a microservice-based application.	4	3	5
	b).	Infer how orchestration tools improve container management.	4	4	5
		OR			
9.	**a).**	Use Docker Compose to define multi-container applications.	4	3	5
	b).	Categorize the components of Kubernetes architecture.	4	4	5
		UNIT-5			
10.	**a).**	Apply Ansible playbooks to automate infrastructure provisioning.	5	3	5
	b).	Categorize the roles and features of Ansible Vault.	5	4	5
		OR			
11.	**a).**	Demonstrate how orchestration is achieved using Kubernetes.	5	3	5
	b).	Compare Ansible with Chef and Puppet for DevOps automation.	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: B23CS3207
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		MACHINE LEARNING			
		For CSE			
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 learning by rote? Give an example.	1	1	2
	b).	Define feature engineering.	1	1	2
	c).	List any two commonly used distance measures in classification.	2	1	2
	d).	State one advantage and one limitation of Decision Trees.	2	1	2
	e).	Define the kernel trick in the context of SVM.	3	1	2
	f).	Name one key advantage of Random Forest over Decision Trees.	3	1	2
	g).	What is the main objective of K-means clustering?	4	1	2
	h).	What is the curse of dimensionality?	4	1	2
	i).	Define a perceptron.	5	1	2
	j).	Define reinforcement learning with a real-world example.	5	1	2
					5 x 10 = 50 Marks
		UNIT-1			
2.	**a).**	Explain the three main paradigms of machine learning	1	2	5
	b).	Discuss the concept of reinforcement learning. How is it different from supervised learning? Provide a real-life example.	1	2	5
		OR			
3.	**a).**	Explain the factors that should be considered during model selection in machine learning?	1	2	5
	b).	Explain the difference between model learning and model prediction. How are they connected in the ML pipeline?	1	2	5
		UNIT-2			
4.	**a).**	Illustrate about various proximity measures with examples. How are they useful in supervised learning?	2	2	5
	b).	Apply K-Nearest Neighbor Classifier to following dataset. **Flower Petal Length (cm) Petal Width (cm) Class** A 1.4 0.2 Setosa B 1.3 0.3 Setosa	2	3	5

		C 1.5 0.2 Setosa D 4.5 1.5 Versicolor E 4.1 1.0 Versicolor F 4.9 1.5 Versicolor Now identify to which class label the given test sample belongs to considering K=3. (Petal Length = 1.5 cm, Petal Width = 0.3 cm)			
		OR			
5.	**a).**	Discuss Logistic Regression in detail.	2	2	5
	b).	Differentiate between binary classification and multi-class classification with appropriate examples.	2	3	5
		UNIT-3			
6.	**a).**	Explain the working of linear regression.	3	2	5
	b).	Explain the working of Random Forest. How does it differ from simple decision trees?	3	2	5
		OR			
7.	**a).**	Illustrate Support Vector Machines with kernel trick.	3	2	5
	b).	Explain the concept of boosting and describe the AdaBoost algorithm in detail.	3	2	5
		UNIT-4			
8	**a).**	Given the following 2D dataset representing two features (X and Y), Apply Principal Component Analysis (PCA) and reduce the data from 2D to 1D. Explain the steps and show the transformed values. **Point X Y** A 2.5 2.4 B 0.5 0.7 C 2.2 2.9 D 1.9 2.2 E 3.1 3.0	4	3	10
		OR			
9.	**a).**	Apply K-Means Clustering with two iterations to form clusters by taking the initial cluster centers as points P1 and P4 on the following dataset to partition into two clusters. P1(1,1), P2(2,2), P3(3,4), P4(5,7), P5(3,5), P6(4,5), P7(4,6).	4	3	5
	b).	Explain agglomerative hierarchical clustering with example.	4	2	5
		UNIT-5			
10.	**a).**	Explain the structure and working of an artificial neuron with a labeled diagram.	5	2	5
	b).	Explain the components of a Markov Decision Process (MDP).	5	2	5

		OR			
11.	**a).**	Explain the backpropagation algorithm and its role in training MLPs.	5	2	5
	b).	Illustrate Q-learning algorithm. How does it help in reinforcement learning?	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: B23CS3209
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		SOFTWARE PROJECT MANAGEMENT			
		For CSE			
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 peer inspections	1	2	2
	b).	Summarize Software Economics	1	2	2
	c).	Describe inception	2	2	2
	d).	Demonstrate the artifact sets	2	3	2
	e).	Summarize Iteration workflows	3	2	2
	f).	Find the planning guidelines in Iterative Process Planning	3	3	2
	g).	Explain Process Automation	4	2	2
	h).	Describe core Metrics of SPM	4	2	2
	i).	Describe Agile Methodology	5	2	2
	j).	Explain orchestration in devops	5	2	2
					5 x 10 = 50 Marks
		UNIT-1			
2.	**a).**	Compare principles of conventional and modern software Engineering	1	2	5
	b).	Explain about Evolution of Software Economics	1	2	5
		OR			
3.	**a).**	Describe The waterfall model	1	2	5
	b).	Summarize Improving Software processes	1	2	5
		UNIT-2			
4.	**a).**	Explain Engineering and production stages in SDLC	2	2	5
	b).	Summarize Engineering artifacts	2	2	5
		OR			
5.	**a).**	Describe Elaboration, construction phases in SDLC	2	2	5
	b).	Explain programmatic artifacts	2	2	5
		UNIT-3			

6.	**a).**	Demonstrate Software process workflows	3	3	5
	b).	Describe Pragmatic planning	3	2	5
		OR			
7.	**a).**	Demonstrate Periodic status assessments	3	3	5
	b).	Compare Management and technical perspectives in software architectures	3	2	5
		UNIT-4			
8	**a).**	Describe Automation Building blocks	4	2	5
	b)	Explain pragmatic Software Metrics	4	2	5
		OR			
9.	**a).**	Compare The seven core Metrics	4	2	5
	b).	Explain evolution of Organizations	4	2	5
		UNIT-5			
10.	**a).**	Describe Patterns for Adopting Scrum	5	2	5
	b).	Demonstrate Tool stack implementation	5	3	5
		OR			
11.	**a).**	Demonstrate Architecture of DevOps	5	2	5
	b).	Describe DevOps delivery pipeline	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: B23CS3210
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		CYBER SECURITY			
		For CSE			
Time: 3Hrs.					**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 Cyber security and list any two harmful acts.	1	1	2
	b).	What is the CIA triad in security	1	1	2
	c).	Outline social engineering with an example.	2	2	2
	d).	Distinguish between cyber stalking and cyber bullying.	2	2	2
	e).	Mention two mobile security threats.	3	1	2
	f).	What is authentication in mobile devices?	3	1	2
	g).	What is phishing? Mention one tool used to prevent it.	4	1	2
	h).	Define SQL Injection with an example.	4	1	2
	i).	List any two cyber laws mentioned in the Indian IT Act.	5	1	2
	j).	Explain the purpose of a digital signature under the IT Act?	5	2	2
					5 x 10 = 50 Marks
		UNIT-1			
2.	**a).**	Explain the taxonomy of attacks with examples of active and passive attacks.	1	2	5
	b).	Identify any two software attacks and recommend suitable defense mechanisms.	1	3	5
		OR			
3.	**a).**	Define vulnerability, threat, and harmful acts in the context of cyber security with examples for each.	1	2	5
	b).	Illustrate the concept of IP spoofing with an example. How can it be prevented?	1	2	5
		UNIT-2			
4.	**a).**	Explain how criminals use botnets and social engineering for cyber-attacks.	2	2	5
	b).	Illustrate how cloud computing contributes to cybercrime? Provide examples and solutions.	2	3	5
		OR			

5.	**a).**	Identify a real-world attack vector case and propose mitigation techniques.	2	3	5
	b).	Compare cyberstalking and cybercrime in public access environments like cyber cafes.	2	2	5
		UNIT-3			
6.	**a).**	Identify a scenario where registry settings of mobile devices were exploited, and suggest preventive actions.	3	3	5
	b).	What are organizational security policies for mobile devices? Explain with examples.	3	2	5
		OR			
7.	**a).**	Explain Credit card Frauds possible on mobile and wireless devices with examples.	3	2	5
	b).	Given a log of suspicious activities on a mobile device, identify potential attacks.	3	3	5
		UNIT-4			
8.	**a).**	Explain how a DoS/DDoS attack is launched and its impact on service availability.	4	2	5
	b).	A banking website is affected by a SQL Injection. Build a Python-based pseudocode to simulate the attack and suggest prevention.	4	3	5
		OR			
9.	**a).**	Discuss how viruses, worms, and trojans differ in propagation and impact.	4	2	5
	b).	Identify how keyloggers, spyware contribute to cyberattacks. Discuss preventive measures.	4	3	5
		UNIT-5			
10.	**a).**	Explain the concept of digital signatures and their relevance in the Indian IT Act.	5	2	5
	b).	Describe the consequences of not addressing cybercrime under the Indian IT Act.	5	2	5
		OR			
11.	**a).**	Discuss the role of cyber law in addressing privacy concerns in cybercrime.	5	2	5
	b).	Given a digital signature log, identify how the authenticity of an email is validated under the IT Act.	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: B23CS3211
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		NATURAL LANGUAGE PROCESSING			
		For CSE			
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 tokenization? Give an example.	1	1	2
	b).	Outline statistical language model.	1	2	2
	c).	Illustrate a regular expression to match a valid email address.	2	2	2
	d).	What is the minimum edit distance? How is it useful in spell correction?	2	1	2
	e).	Define lexical semantics.	3	1	2
	f).	What is discourse coherence?	3	1	2
	g).	List any two applications of Natural Language Generation.	4	1	2
	h).	Explain Direct Machine Translation?	4	2	2
	i).	Define stemming and lemmatization with one example each.	5	1	2
	j).	Describe the role of WordNet in NLP?	5	2	2
					5 x 10 = 50 Marks
		UNIT-1			
2.	**a).**	Explain challenges of NLP and how Indian languages influence processing.	1	2	5
	b).	Identify tokenization with Python code for a paragraph input.	1	3	5
		OR			
3.	**a).**	Explain different grammar-based language models with examples.	1	2	5
	b).	Use unigram and bigram estimates and calculate probabilities of a given sentence.	1	3	5
		UNIT-2			
4.	**a).**	Construct a finite state automaton (FSA) to recognize dates in DD/MM/YYYY format.	2	3	5
	b).	Explain Context free grammar with examples.	2	2	5
		OR			
5.	**a).**	Compute the minimum edit distance between the words "intention" and "execution".	2	3	5
	b).	Explain how POS tagging helps in syntactic analysis. Give examples.	2	2	5

		UNIT-3			
6.	**a).**	Build a simple Python function to disambiguate a word using WordNet.	3	3	5
	b).	Explain different types of ambiguity in natural language.	3	2	5
		OR			
7.	**a).**	Describe meaning representation techniques in semantic analysis.	3	2	5
	b).	Identify Discourse Coherence and Structure using a small paragraph of your choice.	3	3	5
		UNIT-4			
8.	**a).**	Explain the architectural components of a Natural Language Generation (NLG) system?	4	2	5
	b).	Build a rule-based machine translation system to translate English to Hindi.	4	3	5
		OR			
9.	**a).**	Discuss key problems in Machine Translation involving Indian Languages.	4	2	5
	b).	Apply direct MT to translate from English to Telugu.	4	3	5
		UNIT-5			
10.	**a).**	Explain the use of NLP in Information Extraction and Question Answering Systems.	5	2	5
	b).	Apply Porter Stemmer and WordNet Lemmatizer to a paragraph using NLTK in Python.	5	3	5
		OR			
11.	**a).**	Describe various lexical resources used in NLP (e.g., WordNet, FrameNet, and Penn Treebank).	5	2	5
	b).	Explain how automatic text summarization is done..	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: B23CS3212
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		BIG DATA ANALYTICS			
		For CSE			
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).**	Mention one reason for the importance of Big Data	1	1	2
	b).	How does Big Data help in healthcare?	1	1	2
	c).	Differentiate between local and pseudo-distributed Hadoop modes.	2	1	2
	d).	Define scaling out in Hadoop.	2	2	2
	e).	Write one difference between old and new Hadoop API.	3	2	2
	f).	What is a RecordReader in Hadoop MapReduce?	3	2	2
	g).	What is the purpose of using Spark on YARN?	4	2	2
	h).	List any two differences between Hadoop and Spark.	4	2	2
	i).	Difference between local and distributed modes in Pig?	5	2	2
	j).	List two Hive data types.	5	2	2
					5 x 10 = 50 Marks
		UNIT-1			
2.	**a).**	Explain the characteristics and importance of Big Data with suitable examples	1	2	5
	b).	Describe the concept of distributed file systems and explain the architecture and features of GFS.	1	2	5
		OR			
3.	**a).**	Describe the importance of Big Data in various domains.	1	2	5
	b).	Define wrapper classes in Java. Explain their use with examples.	1	3	5
		UNIT-2			
4.	**a).**	Describe the architecture and building blocks of the Hadoop Distributed File System (HDFS).	2	2	5
	b).	What are the major XML configuration files used in Hadoop? Explain their roles.	2	2	5
		OR			
5.	**a).**	Explain HDFS file read and write operations. Describe the role of Java interfaces in these processes.	2	3	5
	b).	Describe how Hadoop handles scaling out and fault tolerance.	2	2	5

		UNIT-3			
6.	**a).**	Explain the steps in writing a MapReduce program using a weather dataset.	3	3	5
	b).	Describe the anatomy of a MapReduce job run. Include all major phases.	3	2	5
		OR			
7.	**a).**	What is Hadoop Streaming? How is it used to write MapReduce programs in other languages?	3	2	5
	b).	Discuss how failures are handled in the MapReduce framework.	3	2	5
		UNIT-4			
8.	**a).**	Describe Spark architecture and describe its core components with a diagram.	4	2	5
	b).	Explain RDD in Spark. Describe its creation and basic transformations and actions with examples.	4	3	5
		OR			
9.	**a).**	Apply Spark on YARN cluster manager for deploying a distributed data processing task.	4	3	5
	b).	Write the procedure to configure Spark cluster using Standalone mode.	4	3	5
		UNIT-5			
10.	**a).**	Write and explain basic Pig Latin scripts for loading, filtering, and grouping data.	5	2	5
	b).	Create Hive tables and demonstrate how to insert, update, and query data using HiveQL.	5	3	5
		OR			
11.	**a).**	Write a HiveQL query to create a database, a table, and perform SELECT queries with filters and conditions	5	3	5
	b).	Describe the role and functioning of Zookeeper in distributed coordination with HBase.	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: B23CS3213	
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					**R23**
III B.Tech. II Semester MODEL QUESTION PAPER					
DISTRIBUTED OPERATING SYSTEM					
For CSE					
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 Distributed Computing System. List its advantages.	1	1	2
	b).	Write a note on transparency in Distributed Systems.	1	1	2
	c).	What is Remote Procedure Call (RPC)?	2	1	2
	d).	What is client-server binding?	2	1	2
	e).	What is memory thrashing?	3	1	2
	f).	What is a deadlock?	3	1	2
	g).	What is load balancing?	4	1	2
	h).	What is a thread in distributed systems?	4	1	2
	i).	Define file replication.	5	1	2
	j).	What is an atomic transaction?	5	1	2
				5 x 10 = 50 Marks	
		UNIT-1			
2.	**a).**	What is a Distributed Operating System? Explain its design issues and challenges.	1	2	5
	b).	Explain failure handling techniques in message-passing systems.	1	2	5
		OR			
3.		Explain the evolution of Distributed Computing Systems and describe different system models.	1	2	10
		UNIT-2			
4.	**a).**	Explain the working of the RPC mechanism with a neat diagram.	2	2	5
	b).	Explain communication protocols used in RPC.	2	2	5
		OR			
5.		Describe how stubs are generated in the context of Remote Procedure Calls (RPC) and explain the process of marshaling arguments for transmitting RPC messages	2	2	10
		UNIT-3			
6.	**a).**	Explain the architecture of DSM systems.	3	2	5

	b).	What is mutual exclusion? Discuss any one algorithm to achieve it.	3	2	5
		OR			
7.		Discuss design and implementation issues in DSM.	3	2	10
		UNIT-4			
8.	**a).**	Explain the task assignment approach with examples.	4	2	5
	b).	Compare load balancing and load sharing approaches.	4	2	5
		OR			
9.		Discuss in detail process migration in distributed systems.	4	2	10
		UNIT-5			
10.		Discuss the file models and file accessing models in DFS.	5	2	10
		OR			
11.	**a).**	Explain file caching schemes with examples.	5	2	5
	b).	How is fault tolerance achieved in DFS?	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