					Course Code: B20CI4101
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R20**
		IV B.Tech. I Semester MODEL QUESTION PAPER			
		SOFTWARE TESTING METHODOLOGIES			
		(For CIC)			
Time: 3 Hrs.					**Max. Marks: 70 M**
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	**KL**	**M**
		UNIT-I			
1.	**a).**	Explain software testing life cycle	1	2	7
	b).	Explain the goals, facts and myths of software testing	1	2	7
		OR			
2.	**a).**	Explain verification of high-level and low-level design	1	2	14
		UNIT-II			
3.	**a).**	Explain equivalence class testing with an example	2	3	14
		OR			
4.	**a).**	Explain basis path testing with an example	2	3	14
		UNIT-III			
5.	**a).**	What is static testing? Explain the difference between inspections and technical reviews	3	2	7
	b).	What is regression testing and when it is done?	3	2	7
		OR			
6.	**a).**	Explain any two integration testing methods with an example	3	2	14
		UNIT-IV			
7.	**a).**	Explain types of test case prioritization	4	2	7
	b).	What is debugging? Explain the debugging process.	4	2	7
		OR			
8.	**a).**	Explain software quality metrics	4	2	14
		UNIT-V			
9.	**a).**	Why testing to be automated and explain the selection of automation tools	5	2	14
		OR			
10.	**a).**	Explain the basic concepts of object-oriented testing (OOT)	5	2	7
	b).	Explain the challenges in testing web-based software	5	2	7

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: B20CI4102

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A) **R20**

IV B.Tech. I Semester MODEL QUESTION PAPER

DATA SCIENCE

(FOR CIC)

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

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

All questions carry equal marks

Assume suitable data if necessary

			CO	KL	M
		UNIT-I			
1.	**a).**	Discuss the significance of data in the modern world and how it influences various industries	1	1	7
	b).	Explain the concept of key connectors in a network and their importance in Data Science.	1	1	7
		OR			
2.	**a).**	Write a Python program to demonstrate argument unpacking using *args and **kwargs.	1	3	6
	b).	Apply the concept of Type Annotations in Python to enhance code readability and maintainability.	1	3	8
		UNIT-II			
3.	**a).**	Given the following sales data of a retail store over five months, use Matplotlib to visualize the data using appropriate charts: Month | January | February | March | April | May | June Sales (INR) | 50000 | 70000 | 60000 | 80000 | 75000 | 82000 Customers | 200 | 250 | 230 | 270 | 260 | 250 i. Plot a bar chart to represent monthly sales. ii. Plot a line chart showing the trend of customer visits. iii. Create a scatter plot to analyze the relationship between sales and the number of customers	2	3	8
	b).	Examine Simpson's Paradox with a real-world example and justify how aggregated data can lead to misleading conclusions	2	3	6
		OR			
4.	**a).**	Compare Minibatch Gradient Descent and Stochastic Gradient Descent in terms of efficiency and accuracy.	2	4	8
	b).	Explain the fundamental idea behind Gradient Descent and its role in optimization.	2	2	6
		UNIT-III			
5.	**a).**	Write a Python program to read data from a file and process it. Additionally, demonstrate how to retrieve data from a web API and	3	3	7

		display the results.			
	b).	Compare how PCA is different from other dimensionality reduction techniques, such as Linear Discriminant Analysis (LDA).	3	3	7
		OR			
6.	**a).**	Apply Bayes' Theorem to determine the probability that an email containing the word 'lottery' is spam. Given the prior probabilities of spam and non-spam emails, along with the likelihood of the word 'lottery' appearing in each category, calculate the posterior probability that the email is spam, following a step-by-step approach.	3	3	7
	b).	Apply the concept of the normal distribution to real-world scenarios such as finance and biology. Analyze why it is widely used in these fields and provide relevant examples to support your explanation.	4	3	7
		UNIT-IV			
7.	**a).**	Discuss the different types of regression models, including simple linear regression, multiple linear regression, polynomial regression, and logistic regression. Provide mathematical formulations for each regression model, outlining the assumptions, advantages, and limitations of each.	4	4	14
		OR			
8.	**a).**	Discuss and derive the mathematical proof of the linear regression model.	4	4	14
		UNIT-V			
9.	**a).**	Compare and contrast k-means and hierarchical clustering, highlighting their advantages and limitations in real-world applications.	5		8
	b).	Explain the working of Matrix Factorization in recommendation systems.	5	2	6
		OR			
10.	**a).**	Analyze the trade-offs between accuracy and fairness in machine learning models. Provide an example of a biased recommendation system and suggest mitigation strategies.	5	3	7
	b).	Compare Matplotlib and Seaborn for data visualization. Provide examples where one is more effective than the other.	5	3	7

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: B20CI4103		
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R20**
		IV B.Tech. I Semester MODEL QUESTION PAPER			
		PRIVACY AND SECURITY IN IOT			
		(For CIC)			
Time: 3 Hrs.					**Max. Marks: 70 M**
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	**KL**	**M**
		UNIT-I			
1.	**a).**	Explain the architecture of IoT with the help of a neat diagram.	1	2	7
	b).	Describe the privacy concerns that arise in IoT-enabled environments.	1	2	7
		OR			
2.	**a).**	Explain the role of cloud in IoT and related security issues.	1	2	7
	b).	Describe the common vulnerabilities present in IoT devices.	1	2	7
		UNIT-II			
3.	**a).**	Describe the basics of cryptography and its relevance in IoT.	2	2	7
	b).	Explain symmetric and asymmetric encryption techniques with examples.	2	2	7
		OR			
4.	**a).**	Discuss the authentication challenges in IoT environments.	2	2	7
	b).	Explain how key management is handled in constrained devices.	2	2	7
		UNIT-III			
5.	**a).**	Explain access control mechanisms used in IoT systems.	3	2	7
	b).	Describe role-based access control (RBAC) with an example.	3	2	7
		OR			
6.	**a).**	Discuss the impact of policy-based security models in IoT.	3	2	7
	b).	Explain how access rights are distributed across an IoT network.	3	2	7
		UNIT-IV			
7.	**a).**	Explain the role of intrusion detection systems in IoT networks.	4	2	7
	b).	Describe how anomaly detection helps in IoT security.	4	2	7
		OR			
8.	**a).**	Discuss the types of attacks common in IoT systems.	4	2	7
	b).	Explain the techniques for securing wireless sensor networks.	4	2	7
		UNIT-V			
9.	**a).**	Describe the concept of privacy-by-design in IoT systems.	5	2	7
	b).	Explain the role of data anonymization in protecting IoT user data.	5	2	7

		OR			
10.	**a).**	Explain the GDPR guidelines applicable to IoT.	5	2	7
	b).	Discuss privacy-preserving techniques in smart healthcare IoT applications.	5	2	7

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: B20CS4101		
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R20**
		IV B.Tech. I Semester MODEL QUESTION PAPER			
		CLOUD COMPUTING			
		(For CIC)			
Time: 3 Hrs.					**Max. Marks: 70 M**
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	**KL**	**M**
		UNIT-I			
1.	**a).**	What is cloud computing? Explain the challenges of cloud computing	1	2	7
	b).	Explain cloud computing service models with example	1	2	7
		OR			
2.	**a).**	Explain how concurrency modelling done with Petri Nets	1	2	14
		UNIT-II			
3.	**a).**	List and describe the core components of any two popular cloud providers.	2	2	14
		OR			
4.	**a).**	Explain what Apache Zookeeper is and its primary function in cloud platforms.	2	2	14
		UNIT-III			
5.	**a).**	Analyze scenarios where paravirtualization might outperform full virtualization, considering application and security needs.	3	3	7
	b).	Describe how virtualization makes more efficient use of hardware resources in cloud computing.	3	2	7
		OR			
6.	**a).**	Evaluate the effectiveness of using dynamic thresholds for feedback control when workloads change rapidly in a cloud environment.	3	3	7
	b).	What is fair queuing in cloud scheduling and how does it differ from traditional scheduling approaches?	3	2	7
		UNIT-IV			
7.	**a).**	What is Amazon S3, and what makes it a popular choice for cloud storage	4	2	7
	b).	Identify security threats specific to distributed and object-based cloud storage systems.	4	2	7
		OR			
8.	**a).**	Describe the role of Apache Hadoop in processing and storing big data, and outline the basic idea behind BigTable and Megastore	4	2	14
		UNIT-V			

9.	**a).**	Summarize the steps required to store and retrieve files from Amazon S3 using a Java application.	5	2	14
		OR			
10.	**a).**	Explain the purpose of Google App Engine and how it simplifies cloud application development.	5	2	14

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: B20CI4104		
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					**R20**
IV B.Tech. I Semester MODEL QUESTION PAPER					
MEAN STACK TECHNOLOGIES					
(For CIC)					
Time: 3 Hrs.				**Max. Marks: 70 M**	
Answer **ONE Question** from **EACH UNIT**					
All questions carry equal marks					
Assume suitable data if necessary					
			CO	**KL**	**M**
		UNIT-I			
1.	**a).**	Explain the architecture of a web page. What are the roles of HTML5 and CSS3?	1	2	7
	b).	Describe the purpose and working of Domain Name Service (DNS) in the World Wide Web.	1	2	7
		OR			
2.	**a).**	Discuss XML schemas and their importance in modern web development.	1	2	7
	b).	Compare and contrast DOM and SAX approaches for parsing XML documents.	1	2	7
		UNIT-II			
3.	**a).**	Explain object creation and manipulation in JavaScript with examples.	2	4	7
	b).	Write a JavaScript function that reverses an array. Explain your logic.	2	4	7
		OR			
4.	**a).**	Describe form validation and form submission in AngularJS using examples.	2	4	7
	b).	Explain the steps in developing a Single Page Application (SPA) using AngularJS.	2	4	7
		UNIT-III			
5.	**a).**	Explain the process of setting up a Node.js and Express.js environment.	3	3	7
	b).	How does Express handle routing? Write sample code to illustrate.	3	3	7
		OR			
6.	**a).**	Discuss the Model-View-Controller (MVC) pattern in Express and its benefits.	3	3	7
	b).	What is middleware in Express.js? Write a code snippet demonstrating its use in request handling.	3	3	7
		UNIT-IV			
7.	**a).**	What are RESTful web services? Illustrate with examples for URI	4	2	7

		design.			
	b).	Explain the concept and significance of conditional requests in RESTful services.	4	2	7
		OR			
8.	**a).**	What is the Virtual DOM in React JS and why is it beneficial?	4	2	7
	b).	Demonstrate how ReactDOM renders components in React JS with a simple code example.	4	2	7
		UNIT-V			
9.	**a).**	Describe MongoDB architecture. How is a new database created in MongoDB?	5	3	7
	b).	Highlight the key features of MongoDB with suitable examples.	5	3	7
		OR			
10.	**a).**	Explain the process of deploying a MEAN stack application on a cloud platform, outlining each step.	5	3	7
	b).	Compare traditional hosting and cloud hosting options for MEAN stack applications.	5	3	7

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: B20CI4105			
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R 20**
		IV B.Tech. I Semester MODEL QUESTION PAPER			
		MALWARE ANALYSIS & REVERSE ENGINEERING			
		(For CIC)			
Time: 3 Hrs.					**Max. Marks:70 M**
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	**KL**	**M**
		UNIT-I			
1.	**a).**	Explain the methodology of Reverse Engineering Malware (REM)	1	2	7
	b).	Describe Malware Classification and malware indicators with examples.	1	2	7
		OR			
2.	**a).**	Explain the importance of MA lab setup and key tools used	1	2	7
	b).	Describe the process of creating custom Clam AV databases.	1	2	7
		UNIT-II			
3.	**a).**	Explain the use of TSK for host and network discovery in malware forensics.	2	2	7
	b).	Apply Reg Ripper plugins for registry forensics with an example.	2	3	7
		OR			
4.	**a).**	Explain how PEiD is used to identify Packers.	2	2	7
	b).	Apply techniques to detect rogue PKI certificates and bypass file ACL restrictions.	2	3	7
		UNIT-III			
5.	**a).**	Explain the procedure of configuring JIT Debugger for shellcode analysis.	3	2	7
	b).	Apply debugging techniques with Python scripts for analyzing malware.	3	3	7
		OR			
6.	**a).**	Explain how to debug DLLs in a VMware/Parallels environment.	3	2	7
	b).	Apply breakpoint setting and execution control in malware debugging.	3	3	7

		UNIT-IV			
7.	**a).**	Explain the steps involved in memory dumping using MoonSols Windows Memory Toolkit	4	2	7
	b).	Discuss how Volatility helps in investigating processes from memory dumps.	4	2	7
		OR			
8.	**a).**	Describe the process of identifying injected code in memory using YARA.	4	2	7
	b).	Explain the methodology to detect and analyze suspicious DLLs loaded in memory.	4	2	7
		UNIT-V			
9.	**a).**	Explain DNS hostname resolution and passive DNS query techniques.	5	2	7
	b).	Apply WHOIS and Reverse IP Search for domain research and mapping.	5	3	7
		OR			
10.	**a).**	Explain how to create static and interactive IP maps for source tracking.	5	2	7
	b).	Apply DNS record analysis to trace malware source origins	5	3	7

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: B20CI4106		
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R20**
		IV B.Tech. I Semester MODEL QUESTION PAPER			
		INFORMATION SECURITY MANAGEMENT STANDARDS			
		(For CIC)			
Time: 3 Hrs.					**Max. Marks: 70 M**
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	**KL**	**M**
		UNIT-I			
1.	**a).**	Explain about CNSS security Model.	1	2	6
	b).	Explain the planning for information security implementation.	1	2	8
		OR			
2.	**a).**	Explain about principles of information security management	1	2	8
	b).	Explain about Strategic planning in an organization.	1	2	6
		UNIT-II			
3.	**a).**	Discuss about Enterprise Information Security Policy.	2	2	6
	b).	Explain placing information security within an organization.	2	2	8
		OR			
4.	**a).**	Discuss about System Specific security policy.	2	2	6
	b).	Explain project management in information security	2	2	8
		UNIT-III			
5.	**a).**	Explain Risk communication monitoring and review.	3	2	6
	b).	Explain NIST Security management models.	3	2	8
		OR			
6.	**a).**	Explain Risk Management Methodologies.	3	2	6
	b).	Explain different Security Architecture Models.	3	2	8
		UNIT-IV			
7.	**a).**	Explain Information Security Performance Measurement.	4	3	8
	b).	Discuss about Disaster Recovery in information security management.	4	2	6
		OR			
8.	**a).**	Explain about Security Employment Practices.	4	2	7
	b).	Discuss about Business Continuity in information security management.	4	3	7
		UNIT-V			
9.	**a).**	Discuss about relationship between PCIDSS and PCISSC Software Standards.	5	2	8

	b).	Explain different approaches for implementing and validating PCIDSS.	5	2	6
		OR			
10.	**a).**	Explain the best practices for implementing PCIDSS into business processes.	5	2	6
	b).	Discuss about testing methods for PCIDSS Requirements.	5	2	8

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: B20CI4107		
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					**R20**
IV B.Tech. I Semester MODEL QUESTION PAPER					
CYBER CRIME INVESTIGATION AND DIGITAL FORENSICS					
(For CIC)					
Time: 3 Hrs.					**Max. Marks: 70M**
Answer **ONE Question** from **EACH UNIT**					
All questions carry equal marks					
Assume suitable data if necessary					
			CO	**KL**	**M**
		UNIT-I			
1.	**a).**	Classify the different social engineering attack techniques.	1	2	7
	b).	Compare Individual and Government/Organization Cybercrime.	1	2	7
		OR			
2.	**a).**	Determine SQL Injections, DDOS attacks, Ransomware, Brute Force attacks.	1	2	7
	b).	Explain the categories of Cybercrime by I4C.	1	2	7
		UNIT-II			
3.	**a).**	Explain in details about internet Hacking and Cracking.	2	2	7
	b).	Distinguish Exploitation and Stalking.	2	2	7
		OR			
4.	**a).**	Explain in detail about Software Piracy and its types.	2	2	7
	b).	Explain Trojans, Viruses, Worms and Backdoor attacks.	2	2	7
		UNIT-III			
5.	**a).**	Demonstrate Password Cracking in detail.	3	2	7
	b).	Explain in detail about digital evidence collection.	3	2	7
		OR			
6.	**a).**	Explain the recovery process of deleted evidences.	3	2	7
	b).	Discuss the various steps in preserving digital evidence.	3	2	7
		UNIT-IV			
7.	**a).**	Apply different Forensic Hardware tools with a real world scenario.	4	3	7
	b).	Apply Forensic Ballistics for Bullet and Cartridge case.	4	3	7
		OR			
8.	**a).**	Apply the process of fingerprint recognition to a investigation scenario	4	3	7
	b).	Demonstrate the use of audio and video enhancement techniques in recovering digital evidence from tampered CCTV footage.	4	3	7
		UNIT-V			
9.	**a).**	Estimate the strategy to give security guidelines to Web servers.	5	2	7

	b).	Explain CERT in detail	5	2	7
		OR			
10.	**a).**	Explain in detail about the Intrusion Detection System.	5	2	7
	b).	Evaluate and explain the IT security policies for Government organizations	5	2	7

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: B20CI4108			
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R 20**
		IV B.Tech. I Semester MODEL QUESTION PAPER			
		INTRUSION DETECTION SYSTEM			
		(For CIC)			
Time: 3 Hrs.					**Max. Marks:70 M**
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	**KL**	**M**
		UNIT-I			
1.	**a).**	Explain the basic concepts of Intrusion Detection Systems (IDS) and describe the need and types of IDS.	1	2	7
	b).	Differentiate between host-based and network-based information sources in IDS.	1	2	7
		OR			
2.	**a).**	Define and explain various internal and external threats to data in an organization.	1	2	7
	b).	Discuss the history and evolution of intrusion detection systems.	1	2	7
		UNIT-II			
3.	**a).**	Demonstrate the working principles of Intrusion Prevention Systems (IPS) and Hybrid IDS.	2	3	7
	b).	Apply different response types and the process of mapping responses to policies in IDS.	2	3	7
		OR			
4.	**a).**	Implement credential and non-credential vulnerability analysis techniques.	2	3	7
	b).	Apply protocol-based IDS and explain its analysis scheme.	2	3	7
		UNIT-III			
5.	**a).**	Demonstrate the step-by-step procedure to compile and install Snort with multiple network interfaces.	3	3	7
	b).	Apply various Snort alert modes and explain with examples.	3	3	7
		OR			
6.	**a).**	Implement Snort command line options and scenarios for installing Snort in real-time environments.	3	3	7
	b).	Use different Snort modes and explain their functionalities.	3	3	7

		UNIT-IV			
7.	**a).**	Demonstrate Snort rule headers and options with suitable examples.	4	2	7
	b).	Apply the usage of plugins, preprocessors, and output modules in Snort.	4	3	7
		OR			
8.	**a).**	Implement how to configure Snort with MySQL and discuss its advantages.	4	3	7
	b).	Apply the structure and significance of Snort configuration files.	4	3	7
		UNIT-V			
9.	**a).**	Discuss the architecture models of IDS and IPS with appropriate diagrams.	5	2	7
	b).	Explain the role of ACID and Snort Snarf with Snort in intrusion detection.	5	2	7
		OR			
10.	**a).**	Illustrate the effectiveness of using Snort with ACID in real-time intrusion detection scenarios.	5	2	7
	b).	Describe the steps involved in agent development for intrusion detection.	5	2	7

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: B20CI4109		
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R20**
		IV B.Tech. I Semester MODEL QUESTION PAPER			
		DEEP LEARNING			
		(For CIC)			
Time: 3 Hrs.					**Max. Marks: 70 M**
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	**KL**	**M**
		UNIT-I			
1.	**a).**	Discuss the importance of cross-validation in model evaluation and compare different cross-validation techniques.	1	2	7
	b).	Explain the concept of gradient-based optimization and discuss challenges like overflow and underflow in numerical computation.	1	2	7
		OR			
2.	**a).**	Explain the derivation of the solution for Linear Least Squares and explain its application in linear regression.	1	2	7
	b).	Demonstrate the relationship between marginal and conditional probability using Bayes' Rule with an example.	1	3	7
		UNIT-II			
3.	**a).**	Discuss the concepts of overfitting and underfitting with an example.	2	2	7
	b).	Differentiate three properties of different activation functions.	2	3	7
		OR			
4.	**a).**	Explain the concept of regularization in deep learning.	2	2	7
	b).	Explain the concept of the bias-variance tradeoffin machine learning	2	2	7
		UNIT-III			
5.	**a).**	Explain the basic architecture of a recurrent neural network (RNN)	3	2	7
	b).	Discuss the role of pooling layers in CNNs and the different types of pooling	3	2	7
		OR			
6.	**a).**	Explain briefly about the Long Short-Term Memory (LSTM) network	3	2	7
	b).	Explain the general structure of an encoder-decoder architecture	3	2	7
		UNIT-IV			
7.	**a).**	Explain the concept of auto encoders and their applications in machine learning.	4	2	7
	b).	Discuss how Adagrad optimization algorithms work and discuss their advantages and disadvantages.	4	2	7
		OR			

8.	**a).**	Compare and contrast gradient descent, stochastic gradient descent, and mini-batch gradient descent.	4	4	7
	b).	Discuss how RMSProp optimization algorithms work and Discuss their advantages and disadvantages.	4	2	7
		UNIT-V			
9.	**a).**	Explain the concept of Boltzmann Machines (BMs) as deep generative models.	5	2	7
	b).	Differentiate semantic and instance segmentation.	5	3	7
		OR			
10.	**a).**	Explain the architecture of AlexNet, key components and their roles in image classification.	5	2	7
	b).	Explain how Long Short-Term Memory (LSTM) networks can be used for sentiment analysis.	5	2	7

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: B20CI4110	
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R20**
		IV B.Tech. I Semester MODEL QUESTION PAPER			
		QUANTUM COMPUTING			
		(For CIC)			
Time: 3 Hrs.				**Max. Marks: 70 M**	
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	**KL**	**M**
		UNIT-I			
1.	**a).**	Explain Classical Electromagnetic Theory, Rutherford's Model of the Atom and Bohr's Model of Atoms.	1	2	8
	b).	Define Vector Space Distinguishes the Adjoint Operator and Joint operator	1	1	6
		OR			
2.	**a).**	Describe the postulates of quantum mechanics.	1	2	6
	b).	Illustrate Dirac notation and Wave function with an example	1	2	8
		UNIT-II			
3.	**a).**	Describe quantum unary and binary operators in detail.	2	2	6
	b).	Explain EPR Paradox & Bell Theorem.	2	2	8
		OR			
4.	**a).**	Explain how to represent and measure Qubitin detail.	2	2	6
	b).	Illustrate no cloning theorem.	2	2	8
		UNIT-III			
5.	**a).**	Explain how to analyze Two-qubit gates with an example	3	2	8
	b).	Build Quantum Adder using quantum gates	3	3	6
		OR			
6.	**a).**	Identify the movement of X, Y, Z, H gates.	3	3	8
	b).	Compare Quantum gates with Classical Gates	3	2	6
		UNIT-IV			
7.	**a).**	Explain Photonics and Semiconductor quantum transistor.	4	2	6
	b).	Describe about Shor’s algorithm.	4	2	8
		OR			
8.	**a).**	Compare and contrast spin qubit and super conducting qubit?	4	2	8
	b).	Illustrate Grover algorithm.	4	2	6
		UNIT-V			
9.	**a).**	Compare Shor's bit-flip code and Shor's phase-flip code.	5	2	8

	b).	Demonstrate about Qiskit.	5	2	6
		OR			
10.	**a).**	Analyze Quantum computers and QC Simulators.	5	4	8
	b).	Explain Unique challenges in QEC.	5	2	6

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

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

				Course Code: B20CI4111	
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					**R20**
IV B.Tech. I Semester MODEL QUESTION PAPER					
DEVOPS					
(For CIC)					
Time: 3 Hrs.				**Max. Marks: 70 M**	
Answer **ONE Question** from **EACH UNIT**					
All questions carry equal marks					
Assume suitable data if necessary					
			CO	**KL**	**M**
		UNIT-I			
1.	**a).**	Define the DevOps architecture and explain its workflow with a neat diagram.	1	2	7
	b).	Use Value Stream Mapping to identify bottlenecks in the DevOps process.	1	3	7
2.	**a).**	Compare Agile (Scrum, Kanban) with the traditional SDLC model in the context of DevOps adoption.	1	2	7
	b).	Demonstrate how CI/CD practices improve delivery using a DevOps toolchain (Jenkins, Git, Docker).	1	3	7
		UNIT-II			
3.	**a).**	Demonstrate Git branching and merging with an example for team collaboration.	2	3	7
	b).	Explain how SonarQube helps in code quality analysis. How is it integrated in CI/CD?	2	2	7
		OR			
4.	**a).**	Apply Git workflow for a team working on feature branches.	2	3	7
	b).	Write a short note on Selenium and its role in test automation within CI pipelines,	2	2	7
		UNIT-III			
5.	**a).**	Analyze Jenkins architecture and explain how master-slave setup helps in scaling CI.	3	4	7
	b).	Develop a Jenkins pipeline to build, test, and deploy a Java project integrated with Git.	3	4	7
		OR			
6.	**a).**	Create a Jenkins declarative pipeline for automating a build job.	3	6	7
	b).	Analyze the importance of build triggers and user roles in Jenkins for secure CI.	3	4	7
		UNIT-IV			

7.	**a).**	Analyze the difference between Continuous Integration and Continuous Delivery.	4	4	7
	b).	Demonstrate how to write a Dockerfile to containerize a Node.js application.	4	4	7
		OR			
8.	**a).**	Explain how Docker Compose helps in managing multi-container applications.	4	2	7
	b).	Evaluate the pros and cons of using DockerHub for managing container images in production.	4	5	7
		UNIT-V			
9.	**a).**	Write an Ansible playbook to install Apache and deploy a web application.	5	5	7
	b).	Evaluate Kubernetes ReplicaSets and Services in managing application scalability and availability.	5	5	7
		OR			
10.	**a).**	Explain how Ansible Vault ensures security during configuration management.	5	2	7
	b).	Compare Puppet, Chef, and Ansible for infrastructure as code (IaC) automation	5	5	7

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: B20CI4112

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A) **R20**

IV B.Tech. I Semester MODEL QUESTION PAPER

INFORMATION SECURITY MANAGEMENT STANDARDS

MACHINE LEARNING

(For CIC)

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

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

All questions carry equal marks

Assume suitable data if necessary

			CO	KL	M
		UNIT-I			
1.	**a).**	Explain the three main paradigms of machine learning	1	2	7
	b).	Discuss the concept of reinforcement learning. How is it different from supervised learning? Provide a real-life example.	1	2	7
		OR			
2.	**a).**	Explain the factors that should be considered during model selection in machine learning?	1	2	7
	b).	Explain the difference between model learning and model prediction. How are they connected in the ML pipeline?	1	2	7
		UNIT-II			
3.	**a).**	Illustrate about various proximity measures with examples. How are they useful in supervised learning?	2	2	7
	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 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)	2	3	7
		OR			
4.	**a).**	Discuss Logistic Regression in detail.	2	2	7
	b).	Differentiate between binary classification and multi-class classification with appropriate examples.	2	3	7
		UNIT-III			
5.	**a).**	Explain the working of linear regression.	3	2	7
	b).	Explain the working of Random Forest. How does it differ from simple	3	2	7

		decision trees?			
		OR			
6.	**a).**	Illustrate Support Vector Machines with kernel trick.	3	2	7
	b).	Explain the concept of boosting and describe the AdaBoost algorithm in detail.	3	2	7
		UNIT-IV			
7.	**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.	4	3	14

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

		OR			
8.	**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	7
	b).	Explain agglomerative hierarchical clustering with example.	4	2	7
		UNIT-V			
9.	**a).**	Explain the structure and working of an artificial neuron with a labeled diagram.	5	2	7
	b).	Explain the components of a Markov Decision Process (MDP).	5	2	7
		OR			
10.	**a).**	Explain the backpropagation algorithm and its role in training MLPs.	5	2	7
	b).	Illustrate Q-learning algorithm. How does it help in reinforcement learning?	5	2	7

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: B20CI4113			
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R20**
		IV B.Tech. I Semester MODEL QUESTION PAPER			
		MOBILE AND WIRELESS SECURITY			
		(For CIC)			
Time: 3 Hrs.				**Max. Marks: 70 M**	
		Answer **ONE Question** from **EACH UNIT**			
		All questions carry equal marks			
		Assume suitable data if necessary			
			CO	**KL**	**M**
		UNIT-I			
1.	**a).**	Discuss the evolution of mobile communication systems and their associated security challenges. Compare the security mechanisms in wired and wireless communication systems.	1	2	7
	b).	Explain the security requirements for wireless and mobile communication systems. How do these requirements differ from traditional wired networks?	1	2	7
		OR			
2.	**a).**	What are the advantages and disadvantages of application-level security in mobile communication? Provide examples of mobile applications that implement application-level security.	1	2	7
	b).	Analyze the security issues in wireless and mobile communication systems. How can these issues be mitigated?	1	2	7
		UNIT-II			
3.	**a).**	Provide an overview of cellular systems and their security mechanisms. Discuss the security features of GSM and their limitations.	2	2	7
	b).	Explain the common attacks on 802.11 networks. How can WLAN security be improved to prevent these attacks?	2	3	7
		OR			
4.	**a).**	Analyze the threats and application requirements for wireless network security. How do these threats impact the design of secure wireless networks?	2	3	7
	b).	Discuss the security vulnerabilities in GSM and MTS systems. What are the possible countermeasures to address these vulnerabilities?	2	3	7
		UNIT-III			
5.	**a).**	Explain the security challenges in cellular VoIP services. How can SPIT (Spam over Internet Telephony) be detected and prevented?	3	3	7
	b).	Discuss the vulnerabilities in cellular services and their impact on mobile application security. Provide examples of attacks targeting these vulnerabilities.	3	3	7

		OR			
6.	**a).**	What are the key components of wireless network security? Discuss the security mechanisms used in 3G and 4G networks.	3	2	7
	b).	Explain the challenges in securing wireless sensor networks. How can sensor motes and networks be protected from attacks?	3	3	7
		UNIT-IV			
7.	**a).**	What are MANETs? Discuss their features and applications. What are the security challenges in MANETs?	**4**	**2**	**7**
	b).	Explain the internal and external threats to MANET applications. How can these threats be mitigated?	**4**	**3**	**7**
		OR			
8.	**a).**	Discuss the security attacks on MANETs. What are some of the security solutions proposed for MANETs?	**4**	**3**	**7**
	b).	What is ubiquitous computing (UC)? Explain the need for novel security schemes in UC and the challenges associated with securing UC networks.	**4**	**3**	**7**
		UNIT-V			
9.	**a).**	Discuss the concept of location-based security and privacy in wireless networks. What are the challenges in implementing location-based security?	**5**	**2**	**7**
	b).	Compare the security mechanisms in WiFi and LTE networks. What are the advantages and disadvantages of each?	**5**	**2**	**7**
		OR			
10.	**a).**	What is LiFi? Discuss the security aspects of LiFi and compare them with traditional wireless communication technologies.	**5**	**2**	**7**
	b).	Explain the concept of hybrid systems in wireless communication. What are the security challenges in hybrid systems, and how can they be addressed?	**5**	**2**	**7**

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

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