

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**  
(UGC-AUTONOMOUS INSTITUTION)**B. Tech III Year II Semester (R23) Regular End Semester Examinations, May – 2026**  
**CYBER CRIMES AND DIGITAL FORENSICS**  
(CSE - Cyber Security)

Time: 3Hrs

Max Marks: 70

Attempt all the questions. All parts of the question must be answered in one place only.  
All parts of Q. no. 1 are compulsory. In Q. nos. 2 to 6, answer either A or B only.

S.No.	Question	Marks	CO	BL
1.	i) What is a cybercrime?	1	1	1
	ii) What is Digital Arrest?	1	1	2
	iii) Give an example for malware.	1	2	2
	iv) John repeatedly sends unwanted messages to disturb or threaten Alia, what is the name of this cyber crime?	1	2	2
	v) Name the technique used to convert coded data back to readable form.	1	3	1
	vi) What is data evidence recovery?	1	3	1
	vii) Explain biometric authentication.	1	4	2
	viii) What is network forensics?	1	4	1
	ix) Name the Indian law that governs electronic records and cybercrimes.	1	5	1
	x) What is the importance of chain of custody?	1	5	2
2(A)	(i) Explain the nature and scope of cybercrime with suitable examples.	6	1	2
	(ii) Describe the different categories of cybercrimes and their impact on organizations.	6	1	4
<b>OR</b>				
2(B)	Explain social engineering attacks and analyze how cybercriminals exploit human psychology in cybercrime.	12	1	3
3(A)	(i) Explain the concept of white-collar crimes in cyberspace with examples.	6	2	2
	(ii) Discuss the role of law enforcement agencies in controlling cybercrimes.	6	2	4
<b>OR</b>				
3(B)	Explain the following cybercrime activities: <ul style="list-style-type: none"><li>• Mail bombs</li><li>• Cyber exploitation</li><li>• Intellectual property violations</li><li>• Online fraud</li></ul>	12	2	3
4(A)	(i) Explain the importance of proper documentation during cybercrime investigations.	6	3	2
	(ii) Describe the techniques used to track cyber criminals using digital footprints.	6	3	3
<b>OR</b>				
4(B)	Analyze the investigation tools used in cybercrime investigations and explain their applications.	12	3	4
5(A)	(i) Explain the role of forensic technology and practices in digital investigations.	6	4	2
	(ii) Discuss the importance of network forensics in detecting cyber-attacks.	6	4	3

**OR**

<b>5(B)</b>	Analyze the role of advanced forensic tools in detecting cyber-attacks and identifying attackers.	12	4	4
	(i) Explain the legal principles governing digital evidence.	6	5	2
<b>6(A)</b>	(ii) Discuss the procedures for handling and preserving digital evidence in court.	6	5	3
<b>OR</b>				
<b>6(B)</b>	Evaluate the importance of cyber laws and legal policies in regulating online activities and preventing cybercrimes.	12	5	5

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(UGC-AUTONOMOUS INSTITUTION)**B. Tech III Year II Semester (R23) Regular End Semester Examinations, May – 2026**  
**CRYPTOGRAPHY AND NETWORK SECURITY**  
(CSE - Cyber Security)

Time: 3Hrs

Max Marks: 70

Attempt all the questions. All parts of the question must be answered in one place only.  
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

S.No.	Question	Marks	CO	BL
1.	i) Identify an encryption algorithm that uses 56-bit keys?	1	1	2
	ii) The organizations use an approach wherein letters in a message are replaced with other letters to protect from Hackers. Identify what type of encryption technique is deployed?	1	1	2
	iii) Explain Elliptic Curves over Real Numbers	1	2	3
	iv) How can organizations develop advanced detection mechanisms to identify and prevent highly convincing phishing attacks that mimic trusted sources?	1	2	2
	v) How is the security of a MAC function expressed?	1	3	2
	vi) You are convincing a client to integrate digital signature (to and fro) in their official email communication. What is your response if the client requested you explain its importance?	1	3	2
	vii) Why data integrity controls be must applied both at the application and database levels?	1	4	2
	viii) How does the Two-way authentication verify the authenticity, explain?	1	4	2
	ix) You have identified that company firewall denies all traffic expect specific services, would such a case possible, Explain?	1	5	2
	x) A firewall monitors active connections. What type is it?	1	5	2
2(A)	(i) Explain AES algorithm in detail with diagrams (neat).	6	1	2
	(ii) Illustrate the structure of AES and describe the steps in AES encryption process with example.	6	1	4
<b>OR</b>				
2(B)	Explain the key differences between encryption and steganography with suitable examples and their corresponding applications.	12	1	2
3(A)	(i) Explain Chinese Remainder theorem and find X for the given set of congruent equation using CRT <ul style="list-style-type: none"><li>• <math>X = 2 \pmod{3}</math></li><li>• <math>X = 3 \pmod{5}</math></li><li>• <math>X = 2 \pmod{7}</math></li></ul>	6	2	4
	(ii) Explain Fermat's theorem with neat diagram	6	2	4
<b>OR</b>				
3(B)	Explain RSA algorithm in detail (both encryption and decryption approach) for values defined $p=17, q=11, e=7, m=88$	12	2	2
4(A)	(i) Discuss the properties of Hash Function.	6	3	3
	(ii) Explain in detail the authentication protocol and list its limitations and benefits, how the limitations can be mitigated.	6	3	3

**OR**

<b>4(B)</b>	(i)	A reputed certificate authority has been compromised from an attack. Explain the impact of this attack on security related issues (in detail with suitable examples)	12	3	3
<b>5(A)</b>	(i)	What is IPSec? Explain in detail the services offered by the IPSec.	6	4	2
	(ii)	Where IPSec is normally deployed (Need to explain the IPSec policy and parameters included)?	6	4	3
<b>OR</b>					
<b>5(B)</b>		A health sector-based organization that conduct various research and hold secured patient data from across the globe is hit a replay attack in network and as a technical expert your views are expected on the following queries	12	4	5
	1.	What is this attack and explain its Impact.			
	2.	How could it been presented, explain in detail.			
	3.	What kind of secured mechanisms were to be used.			
<b>6(A)</b>	(i)	Compare packet filtering and stateful filtering.	6	5	3
	(ii)	What is access policy and why is it important.	6	5	2
<b>OR</b>					
<b>6(B)</b>		A university's IT department discovered that one of the staff misconfigured firewalls that causes breach and several systems are affected.	12	5	3
	1.	Explain in your perspective what went wrong that caused the Incident?			
	2.	What steps needs to be taken for fixing this Incident?			
	3.	What policies (preventive measures) should the university enforce to ensure such incidents do not occur?			

**\*\*\*END\*\*\***

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(UGC-AUTONOMOUS INSTITUTION)

**B. Tech III Year II Semester (R23) Regular End Semester Examinations, May – 2026****MACHINE LEARNING**

(CSE - Cyber Security)

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

Attempt all the questions. All parts of the question must be answered in one place only.  
**All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only**

S.No.	Question	Marks	CO	BL
1.	i) What are the types of data in Machine Learning?	1	1	1
	ii) What are steps in data preprocessing.	1	1	1
	iii) What is feature transformation?	1	2	1
	iv) What is meant by model selection in machine learning?	1	2	1
	v) What is Bayesian belief network?	1	3	1
	vi) How would you apply SVM to classify linearly separable data?	1	3	1
	vii) What is the dependent variable in regression?	1	4	1
	viii) What is Multiple Linear Regression?	1	4	1
	ix) Explain the meaning of support in association rule mining.	1	5	2
	x) Explain one real-world application of unsupervised learning	1	5	2
2(A)	Explain Supervised, Unsupervised, and Reinforcement Learning. Give real-world applications for each type.	12	1	3
<b>OR</b>				
2(B)	Compare and contrast Human Learning and Machine Learning. Highlight key differences and similarities with examples.	12	1	3
3(A)	Explain the training process in supervised learning. Describe how labelled data is used to train a model and discuss the concepts of training set, validation set, and test set.	12	2	4
<b>OR</b>				
3(B)	What is model representation in machine learning? Explain different ways in which models can represent relationships between input variables and output variables with examples.	12	2	3
4(A)	Analyze the k-Nearest Neighbors (kNN) algorithm and explain how the choice of k affects performance.	12	3	4
<b>OR</b>				
4(B)	Analyze the working of Support Vector Machines (SVM) and explain the role of the hyperplane.	12	3	4
5(A)	Explain the Polynomial Regression Model with an example and discuss its advantages.	12	4	3
<b>OR</b>				
5(B)	Explain the Logistic Regression model and discuss its applications in classification problems.	12	4	4
6(A)	Discuss the different types of clustering techniques with examples.	12	5	3
<b>OR</b>				
6(B)	Explain hierarchical clustering. Differentiate between agglomerative and divisive approaches.	12	5	4

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(UGC-AUTONOMOUS INSTITUTION)**B. Tech III Year II Semester (R23) Regular End Semester Examinations, May - 2026**  
**DEVOPS**  
(CSE - Cyber Security)

Time: 3Hrs

Max Marks: 70

Attempt all the questions. All parts of the question must be answered in one place only.  
**All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only**

S.No.	Question	Marks	CO	BL
1.	i) What are the origins of DevOps?	1	1	1
	ii) List any two DevOps practices.	1	1	2
	iii) State the term 'Silos'.	1	2	1
	iv) Define the term "delivery pipeline."	1	2	1
	v) What is innovation in DevOps?	1	3	1
	vi) Define microservices architecture	1	3	1
	vii) Explain scaling in DevOps	1	4	2
	viii) Define DevOps Centre of Competency (CoC)	1	4	1
	ix) What is the role of leadership in DevOps adoption?	1	5	1
	x) How do pilot projects reduce implementation risk?	1	5	2
2(A)	A new software engineer joins an IT company where the manager asks them to explain the basic concept and objectives of DevOps during a team discussion.	6	1	2
	(ii) Illustrate how DevOps practices improve collaboration between development and operations teams with suitable example.	6	1	2
<b>OR</b>				
2(B)	A software organization struggles to maintain software quality and release speed. Analyze how DevOps principles and practices can improve both quality and efficiency.	12	1	4
3(A)	(i) Explain the components of the Business Model Canvas with examples.	6	2	2
	(ii) Analyze how customer segments and value propositions influence DevOps strategies.	6	2	4
<b>OR</b>				
3(B)	A technology company wants to determine whether DevOps adoption will improve its business performance. Analyze the impact of DevOps on cost structure and revenue streams.	12	2	4
4(A)	(i) Illustrate how microservices architecture supports innovation in DevOps.	6	3	3
	(ii) Explain the significance impact of technology on innovation in DevOps environments.	6	3	2
<b>OR</b>				
4(B)	(i) Explain the concept of Optimize to Innovate and discuss the role of technology in enabling innovation through DevOps.	12	3	3
5(A)	(i) Explain the importance of standardization of tools and processes in DevOps.	6	4	2
	(ii) Analyze the role of DevOps Center of Competency (CoC) in scaling DevOps	6	4	4

**OR**

<b>5(B)</b>	An enterprise struggles with communication gaps between DevOps teams. Analyze how DevOps organizational structures can solve the problem.	12	4	4
<b>6(A)</b>	(i) Illustrate how pilot projects help in DevOps adoption.	6	5	2
	(ii) Analyze the importance of collaboration and trust in DevOps transformation.	6	5	4

**OR**

<b>6(B)</b>	A business unit wants to apply DevOps thinking to line-of-business operations. Explain how this approach improves efficiency.	12	5	3
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Question Paper Code: 23CSC408

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(UGC-AUTONOMOUS INSTITUTION)

**B. Tech III Year II Semester (R23) Regular End Semester Examinations, May – 2026****SECURITY ASSESSMENT AND RISK ANALYSIS**

(CSE - Cyber Security)

Time: 3Hrs

Max Marks: 70

Attempt all the questions. All parts of the question must be answered in one place only.

**All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only**

S.No.	Question	Marks	CO	BL
1.	i) What is threat modeling?	1	1	1
	ii) What is meant by secure software?	1	1	1
	iii) Define a trust model.	1	2	1
	iv) What is the purpose of security architecture reviews?	1	2	1
	v) Define software assurance.	1	3	1
	vi) What is meant by project security risk?	1	3	1
	vii) What is a Message Digest?	1	4	1
	viii) Define Authentication in computer security.	1	4	1
	ix) List any two security threats in Internet-based systems.	1	5	2
	x) Define E-commerce Security.	1	5	1
2(A)	Discuss about the secure software development life cycle (SSDLC).	12	1	2
OR				
2(B)	With a neat diagram, explain how security requirements are mapped into design specifications.	12	1	2
3(A)	Design a secure architecture for an e-commerce application and explain its components.	12	2	5
OR				
3(B)	Evaluate the effectiveness of security architecture and design reviews in preventing system failures.	12	2	2
4(A)	Analyze how project security risks can impact software quality and reliability.	12	3	3
OR				
4(B)	Discuss how following security best practices reduces known vulnerabilities.	12	3	3
5(A)	Describe the Data Encryption Standard (DES) algorithm with its structure and working.	12	4	2
OR				
5(B)	Explain security protocols used in E-commerce and Web Applications.	12	4	2
6(A)	Discuss the security issues associated with the development and deployment of information systems.	12	5	3
OR				
6(B)	Explain the security challenges in Internet-based e-commerce systems with examples.	12	5	2

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