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MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(Deemed to be University under Section 3 of UGC Act, 1956)

M.Tech. I Year II Semester (R25) Regular End Semester Examinations - June 2026**ADVANCED MACHINE LEARNING**

(Computer Science and Engineering)

Time: 3Hrs**Max Marks: 100**

All parts of a question must be answered in one place only.

Answer one question from each of Units I to V

Q.No.	Question	Marks	CO	BL
UNIT-I				
Q.1.	A weather forecasting organization processes climate datasets from different geographical regions to predict extreme weather events. Assess the significance of Random Variables, Expectation, Variance, and Central Limit Theorem in weather analytics applications.	20 M	1	4
OR				
Q.2.	A financial institution processes large-scale customer transaction datasets to identify behavioral patterns and risk factors for decision support systems. The organization requires probabilistic models for accurate statistical analysis. Assess the role of probability distributions and multivariate Gaussian distribution in financial analytics applications.	20 M	1	5
UNIT-II				
Q.3.	A cybersecurity organization develops intelligent malware detection systems using network traffic datasets collected from cloud environments. Ensemble learning techniques are required to improve classification accuracy and reduce false alarms. Analyze the effectiveness of bagging and Random Forest in cybersecurity prediction systems.	20 M	2	4
OR				
Q.4.	An e-commerce company processes customer purchase records containing multiple categorical attributes. Evaluate the contribution of Boosting Methods, AdaBoost, and CatBoost in personalized recommendation systems.	20 M	2	5
UNIT-III				
Q.5.	An autonomous warehouse robot learns navigation strategies through environmental rewards and penalties. Analyze the formal framework of Reinforcement Learning, Q-learning, and Deep Q-Networks (DQN) in intelligent robotic systems.	20 M	3	4
OR				
Q.6.	A gaming company develops intelligent agents capable of adapting dynamically to changing player strategies. Assess the significance of Double DQN, Dueling Network Architecture, and Multi-Step Learning in stable reinforcement learning systems.	20 M	3	5
UNIT-IV				
Q.7.	A telecom company develops customer churn prediction models using cloud-based datasets. Analyze the importance of Pipelines, K-Fold Cross Validation, and Classification Metrics in machine learning workflow optimization.	20 M	4	4

OR

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| Q.8. | A financial analytics organization optimizes stock prediction models using machine learning workflows. Develop a suitable workflow using Grid Search, Validation Curves, Learning Curves, and Hold-Out Validation for model optimization. | 20 M | 4 | 5 |
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UNIT-V

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| Q.9. | A startup company plans to deploy a recommendation system as a scalable web application. Analyze the role of Serialized Scikit-Learn Estimators, Flask Applications, and SQLite Databases in machine learning deployment. | 20 M | 5 | 4 |
|-------------|---|------|---|---|

OR

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| Q.10. | A healthcare organization develops a regression-based disease prediction system intended for cloud deployment. Assess the significance of Pickle Models, AWS Deployment, and Google Cloud Platforms in scalable machine learning applications. | 20 M | 5 | 5 |
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End

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE
(Deemed to be University under Section 3 of UGC Act, 1956)**M.Tech. I Year II Semester (R25) Regular End Semester Examinations - June 2026****ADVANCED DATA VISUALIZATION TECHNIQUES**

(Computer Science and Engineering)

Time: 3Hrs

Max Marks: 100

All parts of a question must be answered in one place only.
Answer one question from each of Units I to V

Q.No.	Question	Marks	CO	BL
UNIT-I				
Q.1.	Explain the concept of data visualization and discuss the importance of data abstraction and task abstraction in the visualization process.	20 M	1	2
OR				
Q.2.	Summarize the concept of analytical patterns in data visualization and construct different pattern examples that help in extracting meaningful insights from data.	20 M	1	3
UNIT-II				
Q.3.	Classify data visualization techniques into scalar, point, vector, and multidimensional techniques, and explain their characteristics with suitable examples.	20 M	2	2
OR				
Q.4.	Compare k-means clustering and hierarchical clustering techniques with respect to their methodology, advantages, and limitations.	20 M	2	4
UNIT-III				
Q.5.	Explain the concepts of networks and trees in data visualization and illustrate their importance in representing relationships among data elements.	20 M	3	2
OR				
Q.6.	Classify multivariate data visualization techniques into geometric projection, icon-based, pixel-oriented, and hierarchical techniques, and explain their characteristics.	20 M	3	2
UNIT-IV				
Q.7.	Analyze the taxonomy of dashboards and classify different dashboard types based on their purpose, users, and organizational functions.	20 M	4	4
OR				
Q.8.	Evaluate the effectiveness of worksheets and workbooks in supporting large-scale dashboard development projects.	20 M	4	5
UNIT-V				
Q.9.	Construct a workflow for plotting geospatial data using Geoplotlib and explain the steps involved in the visualization process.	20 M	5	3
OR				
Q.10.	Apply the concepts of Bokeh to explain how interactive visualizations improve user engagement and analytical understanding.	20 M	5	3

End

Hall Ticket No:

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Question Paper Code: 25MBCSEDC10

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(Deemed to be University under Section 3 of UGC Act, 1956)**M.Tech. I Year II Semester (R25) Regular End Semester Examinations - June 2026****RESPONSIBLE AI**

(Computer Science and Engineering)

Time: 3Hrs**Max Marks: 100**All parts of a question must be answered in one place only.
Answer one question from each of Units I to V

Q.No.	Question	Marks	CO	BL
UNIT-I				
Q.1.	Elaborate the role of responsible AI in Modern Applications	20 M	1	2
OR				
Q.2.	Illustrate the Importance of Values and Ethics in AI Practice and also analyse the issues when the values are ignored.	20 M	1	3
UNIT-II				
Q.3.	Explain the different sources of bias that can occur in AI systems and discuss how limitations in datasets can affect the fairness and accuracy of AI models.	20 M	2	2
OR				
Q.4.	Differentiate between Group Fairness, Individual Fairness, and Counterfactual Fairness. Explain their significance in ensuring fair AI decision-making.	20 M	2	3
UNIT-III				
Q.5.	Illustrate the challenges associated with interpreting complex machine learning models and how explainable AI helps address these challenges.	20 M	3	3
OR				
Q.6.	Describe the role of simplification and visualization techniques in understanding AI model behaviour.	20 M	3	2
UNIT-IV				
Q.7.	Elaborate the role of AI auditing and fairness assessment in ensuring ethical and responsible AI deployment.	20 M	4	2
OR				
Q.8.	Discuss the emerging Indian AI regulations and ethical frameworks. How do these regulations address issues related to accountability, privacy, fairness, and security in AI systems?	20 M	4	3
UNIT-V				
Q.9.	How do AI frameworks and toolkits help in developing fair, transparent, explainable, and privacy-preserving AI systems? Describe	20 M	5	3
OR				
Q.10.	Evaluate the Aarogya Setu App case study with respect to public health benefits, privacy, consent, data security, transparency, and ethical concerns.	20 M	5	5

*****End*****

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M.Tech. I Year II Semester (R25) Regular End Semester Examinations - June 2026

CYBER SECURITY

(Computer Science and Engineering)

Time: 3Hrs

Max Marks: 100

All parts of a question must be answered in one place only.
Answer one question from each of Units I to V

Q.No.	Question	Marks	CO	BL
UNIT-I				
Q.1.	Describe the various types of cybercrimes and the importance of information security in preventing them.	20 M	1	3
OR				
Q.2.	Examine the legal framework provided by the IT Act, 2000 for the prevention, investigation, and prosecution of cybercrimes.	20 M	1	4
UNIT-II				
Q.3.	Explain the concept of cyber stalking and discuss the measures used to prevent and control it.	20 M	2	3
OR				
Q.4.	Analyze the security challenges and threats associated with cloud computing and their impact on organizations.	20 M	2	4
UNIT-III				
Q.5.	Assess the impact of the rapid growth of mobile and wireless technologies on information security and recommend suitable protection strategies.	20 M	3	5
OR				
Q.6.	Evaluate the effectiveness of mobile security mechanisms in preventing and mitigating attacks on mobile/cell phones.	20 M	3	5
UNIT-IV				
Q.7.	Explain phishing, password cracking, and key logger attacks. Discuss their impact on information security.	20 M	4	3
OR				
Q.8.	Examine the attack process of SQL Injection and Buffer Overflow, and analyze their impact on data confidentiality, integrity, and availability.	20 M	4	4
UNIT-V				
Q.9.	Assess the impact of web threats on organizational reputation, data privacy, and regulatory compliance, and recommend suitable countermeasures.	20 M	5	5
OR				
Q.10.	Evaluate the effectiveness of social media marketing campaigns in achieving organizational objectives and customer engagement.	20 M	5	5

End