

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

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

(CSE-Data Science)

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) State the perceptron learning rule.	1	1	1
	ii) What is the primary goal of using gradient descent in deep learning models?	1	1	1
	iii) Define a feedforward neural network (FNN).	1	2	1
	iv) List the advantages of Adam optimizer.	1	2	1
	v) What is ensemble learning?	1	3	1
	vi) What is meant by bias-variance tradeoff?	1	3	1
	vii) Compare CNN with traditional neural networks.	1	4	1
	viii) List key features of AlexNet.	1	4	1
	ix) Draw the structure of LSTM with gates.	1	5	1
	x) What is meant by the vanishing gradient problem?	1	5	1
2(A)	(i) Describe why gradient descent is widely used for training deep neural networks instead of perceptron learning.	6	1	2
	(ii) Explain the representation power of Multilayer Perceptrons(MLPs).	6	1	2
OR				
2(B)	Illustrate the McCulloch-Pitts neuron model with a neat diagram.	12	1	3
3(A)	Explain the working of Gradient Descent and Stochastic Gradient Descent.	12	2	2
OR				
3(B)	Describe gradient descent and its variants in detail.	12	2	2
4(A)	Describe the role of batch normalization in improving training stability in neural networks.	12	3	2
OR				
4(B)	(i) Demonstrate early stopping using validation loss data.	6	3	2
	(ii) Describe how injecting noise at input improves generalization.	6	3	2
5(A)	(i) Explain the role of pooling layers in CNN and explain different types of pooling.	6	4	2
	(ii) Demonstrate the convolution operation in Convolutional Neural Networks with a suitable example.	6	4	2
OR				
5(B)	Explain the architecture of a Convolutional Neural Network with a neat diagram.	12	4	2
6(A)	Explain in detail about the structure and components of LSTM.	12	5	2
OR				
6(B)	Apply the concept of RNN to model sequential data such as text or speech.	12	5	3

*****END*****

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

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

(CSE – Data Science)

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) Define Analytics	1	1	1
	ii) What is Data Mining?	1	1	1
	iii) Define standard deviation.	1	2	1
	iv) What is missing data?	1	2	1
	v) Define Association Rule Mining.	1	3	1
	vi) What is clustering?	1	3	1
	vii) Define Naïve Bayes classifier.	1	4	2
	viii) What is a Decision Tree?	1	4	1
	ix) Name one boosting algorithm.	1	5	1
	x) What is an ensemble model?	1	5	2
2(A)	(i) Compare Predictive Analytics and Business Intelligence.	6	1	3
	(ii) What are the measures of success for predictive models?	6	1	2
OR				
2(B)	Discuss the major challenges in predictive analytics and suggest solutions.	12	1	2
3(A)	(i) Explain the concept of statistical significance and its importance.	6	2	2
	(ii) Describe techniques for visualizing two-dimensional data.	6	2	2
OR				
3(B)	Discuss how missing values, outliers, and inconsistencies are handled during data preparation.	12	2	2
4(A)	(i) Explain the concept and working of Principal Component Analysis (PCA).	6	3	2
	(ii) Discuss different measures of interestingness of rules (support, confidence, lift).	6	3	2
OR				
4(B)	Illustrate various clustering algorithms (K-means, hierarchical clustering, etc.) with working principles, advantages, and limitations.	12	3	3
5(A)	(i) Explain the Naïve Bayes classifier and its assumptions.	6	4	2
	(ii) Describe different types of regression models.	6	4	2
OR				
5(B)	Explain Decision Tree algorithm in detail, including advantages and limitations.	12	4	2
6(A)	(i) Describe the steps involved in data preparation for text mining.	6	5	2
	(ii) Explain the motivation for using ensemble models.	6	5	2
OR				
6(B)	Compare bagging and boosting techniques in detail, including their advantages and limitations.	12	5	3

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Hall Ticket No:

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Question Paper Code: 23CSD112

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

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

(CSE – Data Science)

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 the purpose of a bar chart?	1	1	1
	ii) Define visualization tools.	1	1	1
	iii) What is K-means clustering?	1	2	1
	iv) Give one example of time-series data.	1	2	1
	v) What is meant by network visualization?	1	3	1
	vi) What are visual attributes?	1	3	1
	vii) List the fields in Power Bi.	1	4	1
	viii) What is the purpose of Power Query used for?	1	4	1
	ix) What is the role of organizational dashboards?	1	5	1
	x) What is meant by an interactive dashboard?	1	5	1
2(A)	(i) Explain pie chart and box plot with neat diagrams.	6	1	2
	(ii) Describe a line chart and a histogram with suitable examples.	6	1	2
OR				
2(B)	What is Explain the four levels of analytical validation with neat diagrams.	12	1	3
3(A)	(i) Explain data abstraction and task abstraction with examples.	6	2	2
	(ii) Explain spatial data visualization techniques with examples.	6	2	2
OR				
3(B)	Explain spatial data visualization and vector visualization techniques with applications and examples.	12	2	3
4(A)	(i) Describe Tree maps. Explain how they help in visualizing hierarchical data.	6	3	2
	(ii) Discuss the importance of parallel coordinates in analyzing multivariate data.	6	3	2
OR				
4(B)	A company wants to visualize website traffic intensity across hours and days. Explain how a heat map can be used for this purpose.	12	3	3
5(A)	(i) Explain the purpose of heat maps in representing data intensity.	6	4	2
	(ii) Describe techniques used for optimization and effective visual communication in dashboards.	6	4	2
OR				
5(B)	A company wants to compare sales performance across multiple regions and products using Tableau. Explain how Tableau features can support this analysis.	12	4	4
6(A)	(i) Explain the concept and importance of interactive dashboard design in data.	6	5	2
	(ii) Describe dashboard taxonomies and organizational functions with suitable Example	6	5	2
OR				
6(B)	Discuss data storytelling techniques and the use of Power BI Q&A for generating narrative insights.	12	5	4

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B. Tech III Year II Semester (R23) Regular End Semester Examinations, May – 2026**COMPUTER NETWORKS INTERNET PROTOCOL**

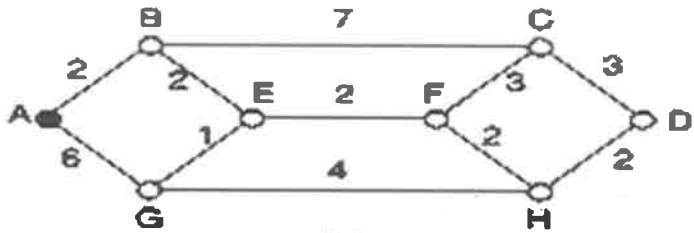
(CSE- Data Science)

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) List out the types of packets switching	1	1	1
	ii) Draw TCP/IP protocol suite	1	1	1
	iii) Compare stop and wait ARQ and selective repeat ARQ	1	2	2
	iv) List out the various types of errors	1	2	1
	v) Define internetworking.	1	3	1
	vi) State the purpose of shortest path routing.	1	3	1
	vii) What is stop-and-wait protocol?	1	4	1
	viii) Identify the main features of TCP.	1	4	1
	ix) State the function of HTTP protocol.	1	5	1
	x) Classify different types of DNS records.	1	5	2
2(A)	How to send the information from one host to another host via all layers in OSI model? Explain with all data formats.	12	1	2
	OR			
2(B)	List out the various switching techniques and explain the Packet switching with an example.	12	1	2
3(A)	Briefly explain the medium access protocols in data link layer.	12	2	2
	OR			
3(B)	Explain the error detection technique of checksum and do all the steps for checking error detection in sender also receiver side. Original data – 10011001 11100010 00100100 10000100.	12	2	2
4(A)	Find the shortest path for the given graph using Dijkstra's algorithm.	12	3	3
				
	OR			
4(B)	Utilize Distance Vector Routing Algorithm for the given graph find the shortest path.	12	3	3
5(A)	Compare stop-and-wait and sliding window protocols in TCP.	12	4	3
	OR			
5(B)	Explain the working of UDP and its advantages and limitations.	12	4	2
6(A)	Illustrate the working of HTTP request-response cycle with an example.	12	5	3
	OR			
6(B)	Explain the architecture and operation of DNS with a neat diagram.	12	5	2

END

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE
(UGC-AUTONOMOUS INSTITUTION)**B. Tech III Year II Semester (R23) Regular End Semester Examinations, May – 2026****CLOUD COMPUTING**
(CSE-Data Science)**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 a Service Level Agreement (SLA)?	1	1	1
	ii) What is pay-as-you-go pricing?	1	1	1
	iii) Name any two Hadoop schedulers.	1	2	2
	iv) What is cloud-native application?	1	2	1
	v) How is Python used in MapReduce applications.	1	3	1
	vi) Which Python library is commonly used to interact with AWS?	1	3	1
	vii) Name any two video streaming protocols.	1	4	1
	viii) Give one example of a recommendation system used in real-world applications.	1	4	1
	ix) What is CSA Cloud Security Architecture?	1	5	1
	x) What is auditing in cloud environments?	1	5	1
2(A)	Explain Identity and Access Management services in cloud platforms.	12	1	2
OR				
2(B)	MITS college Moodle crashes during exams (5K users). How do cloud's 5 key characteristics (on-demand, elasticity, pooling, etc.) fix it with AWS examples?	12	1	2
3(A)	Describe the Hadoop MapReduce job execution flow in detail.	12	2	3
OR				
3(B)	A company is developing a scalable cloud-based application to serve thousands of users simultaneously. The development team must choose appropriate cloud application design methodologies to ensure reliability and scalability. Which cloud application design methodologies should the team consider while developing this cloud application?	12	2	3
4(A)	Describe how Python integrates with Microsoft Azure for developing cloud applications.	12	3	2
OR				
4(B)	A startup company is developing a cloud-based social media analytics application using Python. The application must collect user data, process large datasets, and provide real-time insights through web APIs. The development team needs to choose appropriate design strategies to build a scalable and efficient cloud application. Based on this scenario, explain the different design approaches used in cloud application development using Python.	12	3	3
5(A)	A media company plans to launch a cloud-based live video streaming platform where users can watch movies and live events on different devices such as smartphones, laptops, and smart TVs. To ensure smooth video delivery over varying network conditions,	12	4	3

the company must choose appropriate streaming protocols.
Explain the different streaming protocols used in multimedia cloud applications for this scenario and discuss their advantages.

OR

5(B)	Explain Cloud Application Benchmarking and discuss the workload characteristics and application performance metrics used in benchmarking.	12	4	2
6(A)	Explain the applications of cloud computing in healthcare systems with examples.	12	5	2

OR

6(B)	A company plans to migrate its existing IT infrastructure and applications to the cloud to improve scalability and reduce operational costs. As a cloud engineer, explain the seven-step model for migrating into the cloud and how it can be applied in this situation.	12	5	3
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