

 ARKA JAIN University Jharkhand		NAAC GRADE A ACCREDITED UNIVERSITY	[07-05-2025] END SEM EXAMINATION School of Engineering & IT
Program	Bachelor of Computer Application		
Subject Name	Artificial Neural Networks		Session Even, 2024-2025
Semester	VI	Year	May, 2025
Time: 3 Hour Max. Marks : 70			
Knowledge Level (KL)	• Start writing from 2nd page onwards; don't Write on the 1st Page Backside • Answer all Questions of Section A (Compulsory) • Answer Any Four out of Six of Section B • Answer Any Three out of Five of Section C • Possession of Mobile Phone or any kind of Written Material, Arguments with the Invigilator or Discussion with Co-Student will comes under Unfair Means and will Result in the Cancellation of the Paper(s).		
	K1 : Remembering	K3 : Applying	K5 : Evaluating
	K2 : Understanding	K4 : Analysing	K6 : Creating

Section A (Each question Carry 02 Marks from Q1-i to x - 20 Marks)				
Q. N	QUESTIONS	Marks	COs	KL
1				
i	What do you mean by Epochs in ANN?	02	CO1	K1
ii	From the given network calculate the net input to the output neuron $[x1, x2, x3] = [0.3, 0.5, 0.6]$ and $[w1, w2, w3] = [0.2, 0.1, -0.3]$	02	CO2	K5
iii	Write the generalised Delta rule or extended Delta used to update the weight.	02	CO2	K1
iv	Draw the block diagram for Supervised and Unsupervised learning.	02	CO1	K1
v	What do you understand by momentum factor (α) in back propagation network	02	CO2	K2
vi	From the given network calculate the net input to the output neuron $[x1, x2] = [0.2, 0.6]$ $[w1, w2] = [0.3, 0.7]$ and bias $b = 0.45$	02	CO2	K5
vii	Explain Learning rate (α) in back-propagation network	02	CO1	K1
viii	Draw and explain binary and bipolar sigmoidal function with a neat graph	02	CO2	K2
ix	What do you mean by synaptic links and Activation links in ANN	02	CO1	K2
x	Draw and explain Recurrent Network and its types used in Neural Network Architecture	02	CO2	K1

Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 05 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
2	Analyse and mention the characteristics of Neural Network	05	CO1	K4
3	Explain Hebbian Learning mechanism with one example	05	CO2	K2
4	Differentiate between Single-Layer feed-forward network and multilayer feed-forward network	05	CO2	K4
5	Explain Multi-Layer Perceptron or Back-propagation Learning with a suitable diagram.	05	CO2	K2
6	Explain Bi-directional associative memory with a neat diagram and its types	05	CO4	K2
7	What do you understand by Radial Basis Function Network? Explain the architecture with a neat diagram and write its training algorithm.	05	CO4	K4
Section C (Answer any THREE out of FIVE) – 30 Marks (Each question Carry 10 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
8	Draw and Explain Biological Neuron with its functions	10	CO1	K2
9	Compare between Biological Neuron and Artificial Neuron with respect to speed, size, storage, fault tolerance.	10	CO1	K4
10	Explain about Activation functions and the types of activation functions used in Artificial Neural Network with their graphical representation.	10	CO4	K2
11	Implement OR function with binary inputs and bipolar targets using perceptron training algorithm upto 2 epochs	10	CO4	K3
12	With a flowchart and a neat diagram explain Kohonen Self Organising Maps and also write the training algorithm	10	CO3	K6

CO- Course Outcomes,		KL- Knowledge Level,	PO – Program Outcome
Course Outcomes	CO1	Understand basic concepts of neural networks.	
	CO2	Use neural networks to perform classification for single class and multiclass problems.	
	CO3	Learn and apply the concept of self-organizing maps.	
	CO4	To be able to formalize the problem, to solve it by using a neural network	
GRAPHICAL REPRESENTATION			
Bloom's level wise Marks Distribution		Course Outcome wise Marks Distribution	
■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6		CO1 CO2 CO3 CO4	

 ARKA JAIN University Jharkhand		NAAC GRADE A ACCREDITED UNIVERSITY		[07-05-2025] END SEM EXAMINATION School of Engineering & IT	
Program		Bachelor of Computer Application			
Subject Name		NoSQL Databases			
Semester		VI		Session	Even, 2024-2025
				Year	May, 2025
Time: 3 Hour Max. Marks : 70		• Start writing from 2nd page onwards; <u>don't Write on the 1st Page Backside</u> • Answer all Questions of Section A (Compulsory) • Answer Any Four out of Six of Section B • Answer Any Three out of Five of Section C • Possession of <u>Mobile Phone</u> or any kind of <u>Written Material</u> , <u>Arguments with the Invigilator</u> or <u>Discussion with Co-Student</u> will come under <u>Unfair Means</u> and will <u>Result in the Cancellation of the Paper(s)</u> .			
Knowledge Level (KL)		K1 : Remembering		K3 : Applying	K5 : Evaluating
		K2 : Understanding		K4 : Analysing	K6 : Creating

Section A (Each question Carry 02 Marks from Q1-i to x - 20 Marks)					
Q.N	QUESTIONS		Marks	COs	KL
1					
i	What are the basic features of NoSQL databases?		02	CO1	K1
ii	Differentiate between NoSQL and relational databases.		02	CO1	K2
iii	What is a Key-Value store in NoSQL?		02	CO2	K1
iv	List the types of NoSQL databases and provide a brief description of each.		02	CO1	K1
v	Explain the concept of Sharding in NoSQL databases.		02	CO1	K2
vi	What is Column-Family stores in NoSQL?		02	CO1	K1
vii	Define a Document Data Model in the context of NoSQL.		02	CO2	K1
viii	What is MapReduce and how is it used in NoSQL databases?		02	CO1	K2
ix	Explain the use of NoSQL databases in E-commerce applications.		02	CO4	K2
x	What is the role of Graph NoSQL databases in social network applications?		02	CO4	K2

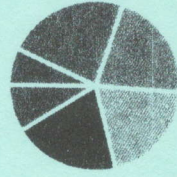
Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 05 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
2	Discuss the main features of MongoDB as a NoSQL database.	05	CO1	K2
3	Describe how MapReduce is applied in NoSQL databases. Give a simple use case.	05	CO1	K3
4	Compare and contrast Column-Family stores with Document-based NoSQL databases.	05	CO2	K4
5	What are the use cases for Graph NoSQL databases, and how do they differ from other NoSQL types?	05	CO4	K4
6	Describe the process of performing transactions across different operations in NoSQL databases.	05	CO3	K3
7	What is Peer-to-Peer Replication in NoSQL databases? Explain its significance.	05	CO1	K2
Section C (Answer any THREE out of FIVE) – 30 Marks (Each question Carry 10 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
8	Explain how MongoDB implements the Document Data Model. Illustrate with a practical example of creating and querying a collection.	10	CO2	K3
9	Discuss how NoSQL databases are used in modern web development, with a focus on scalability and flexibility.	10	CO4	K4
10	Compare the performance of NoSQL databases such as MongoDB and Cassandra for large-scale applications. Discuss factors such as consistency and availability.	10	CO4	K5
11	Discuss in detail the different types of NoSQL databases (Key-Value, Document, Column-Family, and Graph).	10	CO1	K4
12	Explain the concept of Master-Slave Replication in NoSQL databases. How does it work, and what are its advantages and limitations?	10	CO1	K2

CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

Course Outcomes	CO1	Analyze the Data model of storing and retrieving Data.
	CO2	Use of Collection and Document
	CO3	Demonstrate the concepts Transactions Spanning different Operations
	CO4	Analyze the need of NoSQL Key/Value databases in Modern web development

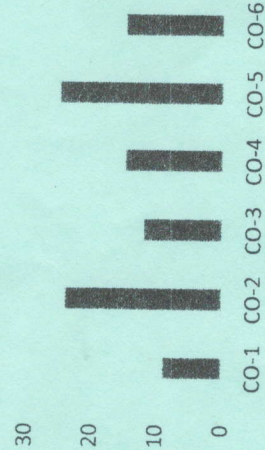
GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Course Outcome wise Marks Distribution



JGI ARKA JAIN University Jharkhand NAAC GRADE A ACCREDITED UNIVERSITY		[09-05-2025] END SEM EXAMINATION School of Engineering & IT		
Program	Bachelor of Computer Application			
Subject Name	Time Series Analysis	Session	Even, 2024-2025	
Semester	VI	Year	May, 2025	
Time: 3 Hour Max. Marks : 70	- Start writing from 2nd page onwards; <u>don't Write on the 1st Page Backside</u> - Answer all Questions of Section A (Compulsory) - Answer Any Four out of Six of Section B - Answer Any Three out of Five of Section C - Possession of Mobile Phone or any kind of Written Material, Arguments with the Invigilator or Discussion with Co-Student will comes under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the Paper(s)</u>.			
	Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating
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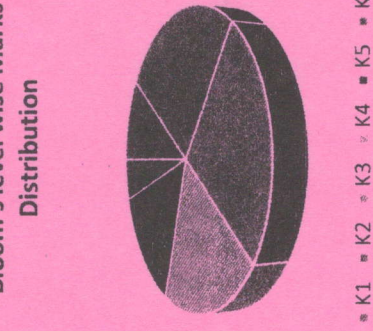
Section A (Each question Carry 02 Marks from Q1-i to x - 20 Marks)					
Q. N	QUESTIONS	Marks	COs	KL	
1					
i	What is a seasonal index?	02	CO2	K5	
ii	What is the autocorrelation function (ACF)?	02	CO3	K2	
iii	Define cyclic variation.	02	CO1	K2	
iv	What is the mean absolute error (MAE)?	02	CO4	K4	
v	Define the Ratio to Trend method.	02	CO2	K1	
vi	State one limitation of the moving average method.	02	CO2	K3	
vii	What does the "I" in ARIMA stand for?	02	CO3	K5	
viii	What is a univariate time series?	02	CO1	K1	
ix	Write the formula for simple exponential smoothing.	02	CO3	K3	
x	Name one test used for checking stationarity.	02	CO2	K2	

Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 05 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
2	Explain the simple exponential smoothing technique with its formula and use cases.	05	CO3	K3
3	What is an ARIMA model? Explain its components.	05	CO4	K2
4	How does the value of smoothing constant α affect forecasting?	05	CO2	K6
5	Why time series analysis is important? Mention its types with examples.	05	CO1	K1
6	Discuss two methods used to test for stationarity.	05	CO3	K4
7	What is the trend component? How is it identified in time series data?	05	CO2	K3
Section C (Answer any THREE out of FIVE) – 30 Marks (Each question Carry 10 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
8	Explain the moving average method for trend analysis. Illustrate with a numerical example.	10	CO2	K4
9	Describe the structure and interpretation of ACF and PACF plots.	10	CO3	K4
10	Define a time series and discuss its components with appropriate examples.	10	CO1	K5
11	Explain AR(p), MA(q), and ARMA(p,q) models in detail. Provide equations and assumptions.	10	CO4	K2
12	How can we test for stationarity using the Augmented Dickey-Fuller (ADF).	10	CO2	K3

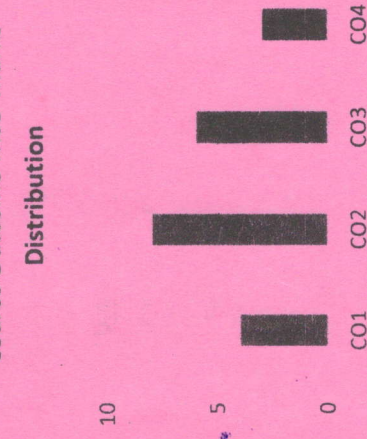
Course Outcomes	CO1	CO2	CO3	CO4	CO5	CO6	CO7
Understand the different elementary models related to time series analysis.							
Apply different model evaluation technique to identify better model to forecast.							
Understand the importance of stationarity in building time series models.							
Understand the use of Granger Causality and Johansen Cointegration method.							
Apply VAR model to the dynamic behaviour of financial time series conditions.							
Select the order of Vector Auto Regression model for better forecast of time series data.							
Build the model using ARCH and GARCH technique for non-constant variance data							

GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



Course Outcome wise Marks Distribution



 ARKA JAIN University Jharkhand				[09-05-2025] END SEM EXAMINATION School of Engineering & IT	
Program	Bachelor of Computer Application				
Subject Name	Cloud Deployment And Management				
Semester	VI	Session	Even, 2024-2025	Year	May, 2025
Time: 3 Hour Max. Marks : 70	- Start writing from 2nd page onwards; <u>don't Write on the 1st Page Backside</u> - Answer all Questions of Section A (Compulsory) - Answer Any Four out of Six of Section B - Answer Any Three out of Five of Section C - Possession of Mobile Phone or any kind of Written Material, <u>Arguments with the Invigilator or Discussion with Co-Student</u> will comes under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the Paper(s).</u>				
	Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating	K6 : Creating
	K2 : Understanding	K4 : Analysing			

Section A (Each question Carry 02 Marks from Q1-i to x – 20 Marks)					
Q. N	QUESTIONS			Marks	COs
1					KL
i	How does grid computing contribute to distributed computing systems?			02	CO5 K1
ii	What is Total Cost of Ownership (TCO)?			02	CO2 K2
iii	How do cloud-based platforms facilitate large-scale data processing efficiently?			02	CO1 K1
iv	How is identity and access management (IAM) implemented in cloud computing?			02	CO3 K2
v	Why is SLA important of cloud services?			02	CO4 K2
vi	What is one of the key advantages of deploying applications through a cloud platform?			02	CO4 K2
vii	Which protocol is commonly used to enable secure communication in cloud environments?			02	CO1 K1
viii	Why is PaaS crucial in cloud computing architecture?			02	CO3 K2
ix	Who are the major cloud service providers, and what services do they offer?			02	CO2 K1
x	What is a hybrid cloud?			02	CO5 K1

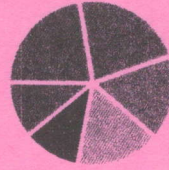
Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 05 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
2	Compare cloud computing with traditional on premise computing in terms of cost, scalability, and maintenance.	05	CO1	K3
3	Write a short note on: cloud deployment model.	05	CO3	K4
4	How do Service Level Agreements (SLAs) influence the selection and monitoring of cloud service providers?	05	CO3	K1
5	What strategies can organizations use to overcome challenges in storing and processing big data in the cloud?	05	CO4	K5
6	Analyze the factors that influence the trustworthiness of cloud services with respect to performance and data protection.	05	CO5	K5
7	Outline the core components of cloud computing architecture and how they interact to deliver scalable services.	05	CO1	K2
Section C (Answer any THREE out of FIVE) – 30 Marks- (Each question Carry 10 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
8	Explain the different cloud service models: IaaS, PaaS, and SaaS.	10	CO2	K4
9	What is virtualization? Discuss different types of virtualization.	10	CO5	K2
10	Compare the four cloud deployment models: public, private, hybrid, and community clouds.	10	CO3	K3
11	What are the key components of an SLA, and how do they ensure accountability, performance guarantees, and customer satisfaction in cloud services?	10	CO4	K1
12	Explain the challenges of cloud security. Discuss identity and access management (IAM), encryption, and secure APIs.	10	CO2	K6

CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

Course Outcomes	CO1	Analyze the components of cloud computing showing how business agility in an organization can be created.
	CO2	Evaluate the deployment of web services from cloud architecture
	CO3	Critique the consistency of services deployed from a cloud architecture.
	CO4	Compare and contrast the economic benefits delivered by various cloud models based on application requirements, economic constraints, and business requirements.
	CO5	Critically analyze case studies to derive the best practice model to apply when developing and deploying cloud-based applications.

GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



Course Outcome wise Marks Distribution

