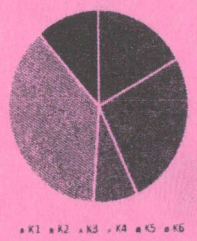
CO- Course Outcomes, **KL**- Knowledge Level, **PO** – Program Outcome

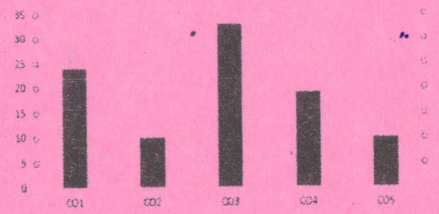
Course Outcomes	CO1	Analyse the Data and carry out supervised, Unsupervised Learning Process.
	CO2	Students will develop relevant Programming
	CO3	Student will develop proficiency with statistical analysis of data.
	CO4	Students will develop the ability to build and asses database models.
	CO5	Students can design more complex algorithm involving more complex data structures and can implement their solutions in multiple languages.

GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



Cource Outcome wise Marks Distribution



ARKA JAIN University Jharkhand — NAAC GRADE A ACCREDITED UNIVERSITY

[06-05-2025]
END SEM EXAMINATION
School of Engineering & IT

Program	**Bachelor of Computer Application**		
Subject Name	**Introduction to Data Science**	**Session**	**Even, 2024-2025**
Semester	**IV**	**Year**	**May, 2025**
Time: 3 Hour Max. Marks : 70	• 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)**.		
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 1	QUESTIONS	Marks	COs	KL
i.	Analyse the need of "Kernel" and "Hinge Loss" in Support Vector Machine.	02	CO1	K4
ii.	Write the formula for cosine Similarity.	02	CO3	K2
iii.	What is the need of Unsupervised learning	02	CO1	K2
iv.	What are the steps involved in Data Preprocessing?	02	CO4	K4
v.	Define the term Data Minning.	02	CO4	K4
vi.	How many types of Machine learning algorithms are there?	02	CO5	K2
vii.	Write various data mining applications.	02	CO5	K3
viii.	Why Cluster analysis is required?	02	CO5	K4
ix.	What is Conditional probability? Write Baye's Theorem.	02	CO5	K4
x.	Explain the term Heterogeneous database?	02	CO5	K2

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2.	How Support Vector Machine Classify the data? Explain "Hyper plane", "Kernel".	05	CO1	K4
3.	Apply k-Nearest Neighbor classification algorithm to determine the student who scored **6 in Math and 8 in Computer science** got passed or not. Use the **following dataset and K is 3.**	05	CO2	K3

Sl No	Math	Computer Science	Result
1	4	3	Fail
2	6	7	Pass
3	7	8	Pass
4	5	5	Fail
5	8	8	Pass

4.	Why Apiori Algorithm is needed? Explain.	05	CO4	K4
5.	Explain the term Knowledge discovery in Database.	05	CO1	K1
6.	Write the tasks associated with data cleaning. How the missing value data of a table is handled?	05	CO2	K4
7.	What is the requirement of Box-plots and Outliers?	05	CO2	K2

Section C (Answer any THREE out of FIVE) – 30 Marks
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8.	Write the Differences between supervised learning and unsupervised Learning. Classify Supervised Learning algorithm. Define Binary and Multiclass classification with example.	10	CO1	K2
9.	Write Short notes on :any two (i) Decision Tree (ii) Clustering (iii) Similarity Matrices	10	CO3	K1
10.	Apply K-means clustering and perform clustering on these given data. A1(2,10),A2(2,5),A3(8,4),B1(5,8),B2(7,5),B3(6,4),C1(1,2), C2(4,9) Consider A1, B1, C1 as the center of each cluster. (The distance is Euclidean distance.)	10	CO4	K6
11.	Write a comparative analysis on Nominal Attribute, Binary Attribute, Ordinal and Numeric attributes of data.	10	CO3	K4
12.	How Similarity and dissimilarity matrix helps to measure the Similarity of different data? x = (5,0,3,0,2,0,0,2,0,0) and y = (3,0,2,0,1,1,0,1,0,1).Calculate the cosine similarity between these two data.	10	CO3	K5

JGI ARKA JAIN University Jharkhand	NAAC GRADE A ACCREDITED UNIVERSITY		[08-05-2025] END SEM EXAMINATION School of Engineering & IT
Program	Bachelor of Computer Application		
Subject Name	R Programming Language	Session	Even, 2024-2025
Semester	IV	Year	May, 2025
Time: 3 Hour Max. Marks : 70	• 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)**.		
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 1	QUESTIONS	Marks	COs	KL
i	What are the different data types in R?	02	CO1	K1
ii	How do you install and load a package in R?	02	CO1	K1
iii	Write the syntax to read a CSV file in R.	02	CO1	K1
iv	What is a data frame in R?	02	CO1	K1
v	Define a vector and give an example in R.	02	CO1	K1
vi	Mention any two functions used for statistical summary in R.	02	CO2	K1
vii	Mention any two functions used for statistical summary in R.	02	CO3	K2
viii	Write the syntax to generate random numbers from a normal distribution.	02	CO3	K1
ix	What function is used for optimization in R?	02	CO4	K1
x	Differentiate between matrix and list in R.	02	CO1	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 use of control structures (if, for, while) in R with examples.	05	CO1	K2
3	Demonstrate the use of mean, median, and standard deviation functions in R.	05	CO2	K3
4	Write an R function to minimize a quadratic function using *optim*().	05	CO4	K3
5	Apply R code to visualize a dataset using *plot*() and *hist*() functions.	05	CO2	K3
6	Explain how random numbers are generated in R for Monte Carlo simulations.	05	CO3	K2
7	Write a program to create and manipulate a data frame in R.	05	CO1	K3

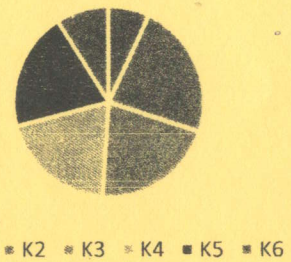
Section C (Answer any THREE out of FIVE) – 30 Marks
(Each question Carry 10 Marks)

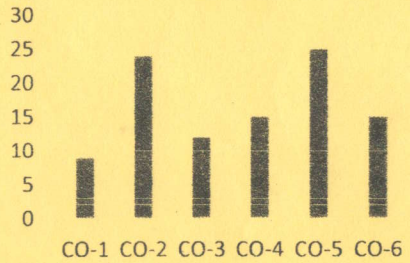
Q. No.	QUESTIONS	Marks	COs	KL
8	Explain the various data structures in R—vectors, lists, and data frames—with examples.	10	CO1	K2
9	What is Monte Carlo simulation? Write a simple R script to estimate π using random number generation.	10	CO3	K3
10	Write an R program to find the minimum and maximum of a user-defined function using built-in methods.	10	CO4	K3
11	Explain any four arithmetic and logical operations in R with examples.	10	CO1	K2
12	Describe the steps to install R and write a sample R program to create and print a vector.	10	CO1	K2

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

Course Outcomes	CO1	Use and program in the programming language R
	CO2	Use R to solve statistical problems
	CO3	Implement and describe Monte Carlo the technology
	CO4	Minimize and maximize functions using R

GRAPHICAL REPRESENTATION





JGI ARKA JAIN University Jharkhand	NAAC GRADE A ACCREDITED UNIVERSITY		[08-05-2025] END SEM EXAMINATION School of Engineering & IT
Program	Bachelor of Computer Application		
Subject Name	Web Programming	Session	Even, 2024-2025
Semester	IV	Year	May, 2025
Time: 3 Hour Max. Marks : 70	• 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)**.		
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 1	QUESTIONS	Marks	COs	KL
i	Define HTML and list its basic structure.	02	CO1	K1
ii	What is the purpose of the tag in HTML?	02	CO1	K1
iii	Mention any four HTML5 semantic tags.	02	CO1	K1
iv	What is the role of an external CSS file?	02	CO2	K2
v	Differentiate between ID and class selectors in CSS.	02	CO2	K2
vi	What is an event in JavaScript? Give one example.	02	CO3	K1
vii	Explain the difference between var, let, and const in JavaScript.	02	CO3	K2
viii	What are cookies in PHP?	02	CO4	K1
ix	Write the syntax to connect PHP with MySQL.	02	CO4	K1
x	What is the use of the $_POST superglobal in PHP?	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	Create a basic HTML form that collects name, email, and password.	05	CO1	K6
3	Write CSS rules to style a webpage with a navigation bar, header, and footer.	05	CO2	K3
4	Explain different types of CSS and their precedence with examples.	05	CO2	K2
5	Create a JavaScript function that validates an email address input.	05	CO3	K3
6	Write PHP code to insert form data into a MySQL database.	05	CO4	K3
7	Analyze how JavaScript interacts with the DOM and modifies HTML elements.	05	CO3	K4

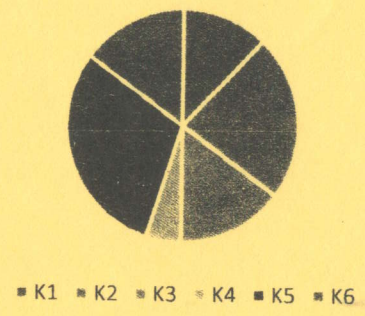
Section C (Answer any THREE out of FIVE) – 30 Marks
(Each question Carry 10 Marks)

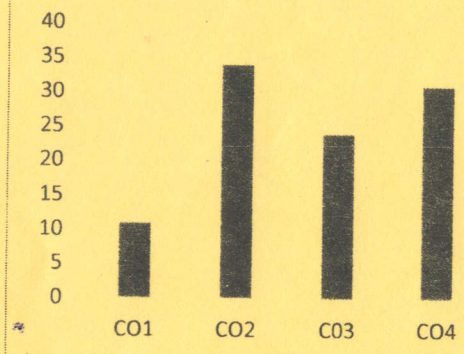
Q. No.	QUESTIONS	Marks	COs	KL
8	Compare and evaluate client-side scripting (JavaScript) and server-side scripting (PHP) with examples.	10	CO4	K5
9	Compare internal, external, and inline CSS in terms of maintainability and performance.	10	CO2	K5
10	Explain the CSS Box Model in detail. Illustrate each component (content, padding, border, margin) with a diagram and example. Also, describe how the box model affects layout and element spacing in a webpage.	10	CO2	K2
11	Create a PHP-based contact form that stores user input into a MySQL database and sends a confirmation email.	10	CO4	K6
12	Evaluate the advantages and disadvantages of using JavaScript frameworks (like React or Vue) in modern web development.	10	CO3	K5

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

Course Outcomes	CO1	Create static HTML pages.
	CO2	Create well-structured and easily maintained CSS code to present HTML pages in different ways.
	CO3	Use JavaScript to add dynamic content to pages.
	CO4	Create dynamic web pages using PHP and My SQL.

GRAPHICAL REPRESENTATION



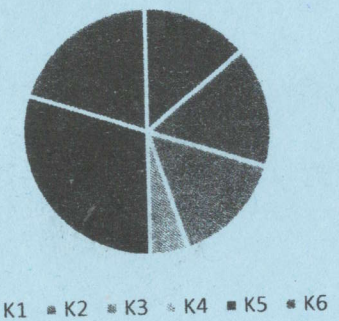


CO- Course Outcomes, **KL**- Knowledge Level, **PO** – Program Outcome

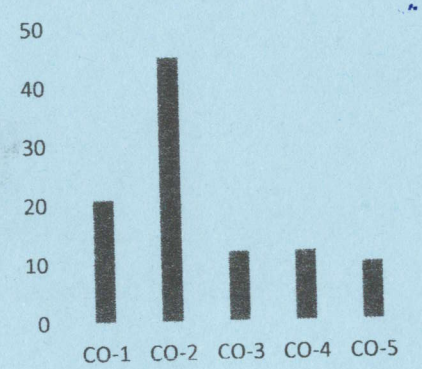
Course Outcomes	CO1	Acquire data through web-scraping and data APIs.
	CO2	Clean and reshape messy datasets.
	CO3	Use exploratory tools such as clustering and visualization tools to analyze data.
	CO4	Use methods such as logistic regression, nearest neighbors, decision trees, and support vector machines to build a classifier.
	CO5	Apply dimensionality reduction tools such as principle component analysis.

GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



Cource Outcome wise Marks Distribution



ARKA JAIN University Jharkhand — NAAC GRADE A

[10-05-2025]
END SEM EXAMINATION
School of Engineering & IT

Program	**Bachelor of Computer Application**		
Subject Name	**Python for Data Science**	**Session**	**Even, 2024-2025**
Semester	**IV**	**Year**	**May, 2025**
Time: 3 Hour Max. Marks : 70	• 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)**.		
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 1	QUESTIONS	Marks	COs	KL
i	List the differences between list and tuple.	02	CO1	K2
ii	What do you understand by central tendency and dispersion?	02	CO1	K1
iii	Define Simpson's Paradox.	02	CO2	K1
iv	What is random variable?	02	CO2	K1
v	Define hypothesis?	02	CO2	K1
vi	What is the difference between Overfitting and Underfitting?	02	CO4	K2
vii	Define P-hacking?	02	CO2	K1
viii	Define the Central Limit Theorem?	02	CO2	K1
ix	What is file? How many types of files supported by Python?	02	CO1	K2
x	Define data visualization.	02	CO3	K1

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Explain "The Zen of Python" and how it impacts writing Python code.	05	CO1	K4
3	What are the differences between Correlation and Causation?	05	CO4	K2
4	Define Exception. Explain the mechanism of handling exception in Python with an example.	05	CO1	K6
5	What is web scraping? Write a Python code to scrape tweets from Twitter.	05	CO1	K6
6	What is Machine Learning? Explain different types of machine learning techniques.	05	CO4	K3
7	Describe data Cleaning and Munging.	05	CO2	K2

Section C (Answer any THREE out of FIVE) – 30 Marks
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	Explain k-Nearest Neighbors algorithm with a suitable example. OR Describe Principal Component analysis with a suitable example. .	10	CO5	K6
9	For the following probability distribution of a discrete random variable X, find i) the constant c, ii) $P[X \leq 3]$ and iii) $P[1 < X < 4]$. X: 0 1 2 3 4 5 p(x): 0 c c 2c 3c c	10	CO2	K5
10	Find the correlation coefficient (r) of the given data: X: 2, 6, 7, 9, 11 Y: 5, 7, 9, 13, 15	10	CO2	K5
11	Explain Data Visualization techniques using Bar Charts, Line Charts, and Scatter plots implementation in Python.	10	CO3	K3
12	Marie is getting married tomorrow, at an outdoor ceremony in the desert. In recent years, it has rained only 5 days each year. Unfortunately, the weatherman has predicted rain for tomorrow. When it actually rains, the weatherman correctly forecasts rain 90% of the time. When it doesn't rain, he incorrectly forecasts rain 10% of the time. What is the probability that it will rain on the day of Marie's wedding?	10	CO2	K5

JGi	ARKA JAIN University Jharkhand	NAAC GRADE A ACCREDITED UNIVERSITY	[10-05-2025] END SEM EXAMINATION School of Engineering & IT

Program	Bachelor of Computer Application		
Subject Name	Introduction to RPA Tools	Session	Even, 2024-2025
Semester	IV	Year	May, 2025
Time: 3 Hour Max. Marks : 70	• 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)**.		

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 1	QUESTIONS	Marks	COs	KL
i	Define Robotic Process Automation.	02	CO1	K1
ii	List any four benefits of RPA.	02	CO1	K1
iii	What are attended and unattended bots in RPA?	02	CO4	K1
iv	Explain how RPA differs from traditional automation.	02	CO1	K2
v	Describe the use of RPA in the banking sector.	02	CO2	K2
vi	Explain the concept of a "workflow" in RPA tools.	02	CO1	K2
vii	Justify the importance of exception handling in RPA workflows.	02	CO3	K5
viii	Evaluate the pros and cons of using RPA in healthcare administration	02	CO2	K5
ix	Name any two popular RPA tools used in the industry.	02	CO1	K1
x	What is the function of a "Recorder" in RPA tools like UiPath?	02	CO1	K1

Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 05 Marks)				
Q. No.	**QUESTIONS**	**Marks**	**COs**	**KL**
2	Explain the lifecycle of RPA development with examples.	05	CO1	K2
3	What is the role of variables in UiPath projects? Provide an example.	05	CO3	K3
4	Describe the purpose of the Ribbon and Quick Access Toolbar in UiPath Studio.	05	CO1	K2
5	What is UiPath Orchestrator, and why is it important?	05	CO2	K2
6	Discuss the design and execution of a workflow in UiPath Studio.	05	CO3	K4
7	Create a workflow in UiPath to extract data from an Excel sheet and log into Notepad.	05	CO3	K6

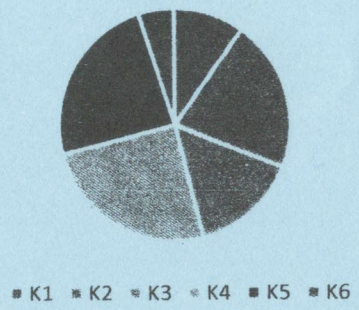
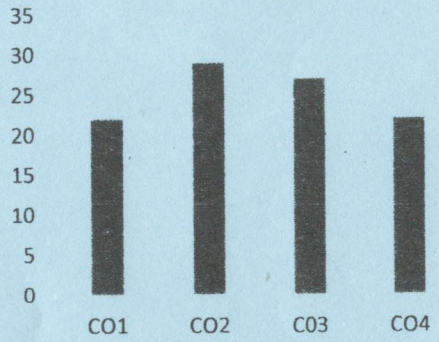
Section C (Answer any THREE out of FIVE) – 30 Marks (Each question Carry 10 Marks)				
Q. No.	**QUESTIONS**	**Marks**	**COs**	**KL**
8	Compare and evaluate different components of an RPA architecture with examples.	10	CO4	K5
9	Outline the debugging techniques used to identify and fix errors in UiPath workflows.	10	CO3	K4
10	Analyze the pros and cons of implementing RPA in healthcare industry.	10	CO2	K4
11	What are the steps for UiPath can automate tasks in Excel?	10	CO4	K3
12	Outline a case study where UiPath has significantly improved a business process.	10	CO2	K5

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

Course Outcomes	CO1	Understand the various concepts, terminologies of RPA systems.
	CO2	Understand the application areas of RPA
	CO3	Use various techniques of automation and control in Robotics
	CO4	Understand building blocks of RPA and characteristics.

GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution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