

S. S. JAIN SUBODH P.G. COLLEGE, JAIPUR (Autonomous)

Assignment October, 2026

Programme - M.Sc.IT (AI & DS) I Semester

Paper - MSAIDS101 (Programming Fundamentals)

Note: Attempt any four Questions selecting at least one question from each unit. Each Question Carries equal marks.

UNIT - I

1. Write short notes on
 - i. Data Types
 - ii. C Tokens
 - iii. Basic Structure of a C Program
2. Explain all the Operators available in C programming language with a suitable example.

UNIT - II

3. What is an array? Write a program to find the maximum of an array of n elements.
4. What is a function? What are the different categories of a function? Explain all of them with the help of a suitable example.

UNIT - III

5. What is a structure? Write a 'C' Program to read and display data of n students using array of structures.
6. What is pointer? Write a 'C' Program to swap two numbers using pointers.

UNIT - IV

7. What is a File? Write a C program to input data into a file from keyboard and then display the contents of the file on the display screen.
8. What is Dynamic Memory Allocation? What are the different functions available in Dynamic Memory Allocation? Explain them.

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Assignment- October 2026

Programme-M. Sc. IT (AI & Data Structure) Semester-I

Paper Code-MSAIDS102 Database Management System

Max Marks-30

Note: Attempt any four questions selecting at least one question from each unit.

UNIT-I

Q1. Define DBMS. Explain the need and importance of a Database Management System.

Q2. Differentiate between the following (**any two**)-

- a) 2-Tier and 3-Tier Architecture
- b) Logical and Physical Data Independence
- c) Schema and Instance

UNIT-II

Q3. What is Relational Algebra? Explain any five relational algebra operations with suitable examples.

Q4. Discuss Normalization. Why it is needed? Explain 1-NF, 2-NF and 3-NF with example.

UNIT-III

Q5. Define SQL. Explain DDL and DML commands of SQL.

Q6. What is Transaction? Explain ACID properties of Transaction.

UNIT-IV

Q7. Define Deadlock. Explain Deadlock Prevention with example.

Q8. Write notes of Following (**any two**)-

- a) Distributed Database
- b) Client-Server Database
- c) Two-Phase Locking Protocol

S. S. JAIN SUBODH P. G. COLLEGE, JAIPUR (Autonomous)
Assignment October, 2026
Programme - M.Sc. IT / AI and Data Science / Cyber Security
I Semester
Paper - MSIT105 / MSAIDS105/ MSCS105(Operating System)

Note: Attempt any four Questions selecting at least one question from each unit. Each Question Carries equal marks.

UNIT - I

1. What is Operating System. Explain its functions? What are different Types of Operating Systems?
2. Write short notes on
 1. Assemblers/ Interpreters/ Compilers
 2. Hierarchical/Layered Organization of OS

UNIT - II

3.
 - i) What do you mean by Process. Explain process life cycle with suitable diagram?
 - ii) What is Scheduling? Explain different types of scheduling algorithms?
4. Explain what is Deadlock and conditions necessary for occurrence of Deadlock? What are mechanisms of Deadlock avoidance and recovery?

UNIT - III

5. Explain the concept of Memory Management techniques?
6. Explain concept of Virtual Memory with suitable diagram? What do you mean by Demand Paging explain?

UNIT - IV

7. Explain the following
 - i) Disk Structure
 - ii) Access Methods
 - iii) Sharable and Non Sharable Device
8. What do you mean by File and Directory Structure? What do you mean by file allocation methods?

**S. S. JAIN SUBODH P.G.(AUTONOMOUS) COLLEGE,
JAIPUR**

Affiliated to University of Rajasthan, Jaipur

MSc. (MSAID) Semester I, October 2026

Assignment

Subject: Data Communication and Computer Network

Paper Code: MSAIDS 103

Max. Marks: 20

Instructions to the Candidates

NOTE: *Attempt any Four questions, attempt at least one question from each unit. Each Question Carries equal marks*

Unit - I

- 1) What do you mean by Computer Network? Explain type of Networks.
- 2) Explain Data Communication System along with Mode of Communication

Unit - II

- 3) What do you mean by Network Topology? Explain all type of Topologies in detail.
- 4) Explain all type of Guided Media.

Unit – III

- 5) Explain OSI Model.
- 6) Explain Asynchronous and Asynchronous Transmission.

Unit – IV

- 7) Explain following
 - a) Switches
 - b) Router
 - c) Bridge
- 8) Explain following
 - a) SMTP
 - b) FTP
 - c) Broadband

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M.Sc. IT (AI and Data Science) – III Semester

ASSIGNMENT

Subject: Python Programming with AI and Data Science

Paper Code: MSAIDS302

Maximum Marks: 30

Attempt one question from each unit.

UNIT – I

Q1. Explain the basic data types, variables and operators in Python with suitable examples. **(7.5)**

Q2. Explain decision-making and looping statements in Python with suitable examples of if-else, for and while. **(7.5)**

UNIT – II

Q3. Explain lists, tuples, dictionaries and sets in Python with suitable examples. **(7.5)**

Q4. What are functions in Python? Explain function arguments, return values and lambda functions with examples. **(7.5)**

UNIT – III

Q5. What is NumPy? Explain the creation and basic manipulation of NumPy arrays with suitable examples. **(7.5)**

Q6. What is Pandas? Explain Series and DataFrame. Also describe basic data cleaning and filtering using Pandas. **(7.5)**

UNIT – IV

Q7. Explain the concepts of Artificial Intelligence, Machine Learning and Deep Learning and give suitable examples of their applications. **(7.5)**

Q8. Explain the basic steps of building and evaluating a Machine Learning model using Python. Discuss features, labels, training data and accuracy. **(7.5)**

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Assignment- October 2026

Programme-M.Sc.IT (AI and Data Science) III Semester

Paper Code-MSAIDS305: Cloud Computing

Max Marks-(4X7.5=30)

Note: Attempt any four questions selecting atleast one question from each unit.

UNIT-I

Q1. What is Cloud Computing? Explain the nutshell, vision, enabling technologies, key features and major components of Cloud Computing in detail.

Q2.Explain the Cloud Service Models in detail. Discuss IaaS, PaaS, and SaaS with their architecture, features, advantages, and limitations.

UNIT-II

Q3.Explain the different high-level programming languages and programming approaches used for Cloud Computing.

Q4.What is Cloud Programming? Explain its important features and discuss parallel and distributed programming paradigms in detail.

UNIT-III

Q5. What is Virtualization? Explain the concept, benefits, and importance of virtualization in Cloud Computing. Discuss the different implementation levels of virtualization with suitable examples.

Q6. Discuss the working and features of Hypervisors, with special reference to VMware, KVM, and Xen. Compare these virtualization technologies.

UNIT-IV

Q7. Explain the fundamentals of Cloud Information Security. Discuss Cloud Security Services, security design principles, security policy implementation and security challenges.

Q8. What is a Service Level Agreement (SLA)? Explain its importance in Cloud Computing. Discuss the major components of an SLA, responsibilities of Cloud providers and users, and the legal issues associated with Cloud Computing.

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M.Sc. IT (AI and Data Science) – III Semester

ASSIGNMENT

Subject: Machine Learning

Paper Code: MSAIDS304

Maximum Marks: 30

Attempt one question from each unit.

UNIT – I

Q1. Explain the different types of Machine Learning—Supervised, Unsupervised and Reinforcement Learning—with suitable examples. **(7.5)**

Q2. What is Concept Learning? Explain the Find-S algorithm with a suitable example. **(7.5)**

UNIT – II

Q3. What is a Decision Tree? Explain its basic structure and working with a simple example. **(7.5)**

Q4. Explain Linear Regression and Logistic Regression. Mention one application of each. **(7.5)**

UNIT – III

Q5. What is Unsupervised Learning? Explain the K-Means Clustering algorithm and its basic steps. **(7.5)**

Q6. What is Dimensionality Reduction? Explain the basic concept of Principal Component Analysis **(7.5)**

UNIT – IV

Q7. Explain the K-Nearest Neighbor (KNN) algorithm with a suitable example. **(7.5)**

Q8. What is Reinforcement Learning? Explain its basic elements and give suitable applications. **(7.5)**

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Assignment- October 2026

Programme-M. Sc. IT(AI &DS) Semester-III

Paper Code-MSAIDS303: Data Visualization Tools and Techniques

Max Marks-(4X 7.5 = 30)

Note: Attempt any four questions selecting at least one question from each unit.

UNIT-I

Q1. Explain the **importance of data visualization**. Discuss any five ways in which visualization helps in data analysis and decision-making.

Q2. Describe the different **types of data visualization** and explain their appropriate applications.

UNIT-II

Q3. What is **Tableau**? Explain its major features and applications in data visualization.

Q4. What is **Microsoft Power BI**? Explain its important features and applications.

UNIT-III

Q5. What is **interactive data visualization**? Explain the importance of adding interactivity to visualizations.

Q6. Explain the **tool-specific interactivity features** available in data visualization tools such as Tableau and Power BI.

UNIT – IV

Q.7. Explain **color theory in data visualization**. Discuss the appropriate use of colors for representing categorical and numerical data.

Q.8. What are **Gestalt principles**? Explain any five Gestalt principles relevant to visualization design.

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Programme-M.Sc.IT (AI and Data Science), Semester-III

Paper: MSAIDS301: Data Science with R

Assignment 2026

Note- Attempt four questions, one question from each unit. Write answer with good presentation. Each question carries equal marks.

Unit – I

1. (a.) What is data science? Explain its importance and need in the modern digital world.
(b.) Explain the following with suitable examples:
 - Structured Data
 - Unstructured Data
2. What is big data? Explain its characteristics and importance also explain the need for business analytics in an organization.

Unit – II

3. Explain data science process with its major stages. What are the different methods used for retrieving data.
4. Explain the following with suitable example.
a) Descriptive Analytics b) Diagnostic Analytics c) Predictive Analytics d) Prescriptive Analytics

Unit – III

5. Explain the following statistical terms:
a) Population b) Sample c) Parameter d) Estimate e) Estimator
6. Explain the Binary Distribution with a suitable example and differentiate between the Chi-Square Test and ANOVA.

Unit – IV

7. Compare Python and R for Data Science applications with suitable examples.
8. What is Regression? Explain its importance in Data Science and describe Linear Regression with a suitable real-world example.