



Date: 30-03-2026

GAUHATI UNIVERSITY
CENTRE FOR DISTANCE AND ONLINE EDUCATION

HOME ASSIGNMENT

Master of Science in Information Technology (M.Sc.-IT)

Semester - III (Session: 2024-25 (July))

Guidelines for Submission:

1. Learners who have been admitted in the Academic Session (2024-25 (July)) will write the Home Assignment.
2. Learners should write their **Roll Number, GU Registration Number, Subject, Semester, Paper Title, Paper Code** and **Name of the Study Center** clearly on the first page of the answer script in the space provided.
3. The formats of the answer scripts are available at and can be downloaded from, the GUCDOE website (www.gucdoe.in).
4. There will be 2 (two) compulsory questions in each paper, and each question will have options (Total Marks: 2 questions × 10 marks= 20 marks).
5. **Typed/Computerized answers will not be accepted.** Learners will write the answers neatly in their own handwriting.
6. Learners should not submit any plagiarized answers as such a practice is deemed to be unfair.
7. Learners of different Study Centers under GUCDOE will mandatorily submit the answer scripts at their respective Study Centers.
8. Learners of GUCDOE center will submit their answer scripts at GUCDOE Office.
9. **Last Date of Submission : 30th April, 2026.**

PAPER: INF 3016 (WEB PROGRAMMING TECHNOLOGIES)

Answer the following questions

2 x 10 = 20

Q. No. 1. Describe the working of internet with a suitable diagram. What are the basic requirements of getting internet connection?

5 + 5 = 10

OR

What is CSS (Cascading Style Sheet)? Explain the different ways to apply CSS styles to an HTML document.

3 + 7 = 10

Q. No. 2. Explain the concept of **client-server computing**. Describe its architecture and working with suitable examples.

5 + 5 = 10

OR

How do you perform create, read, update and delete operations using PHP and MySQL. Provide code examples.

10

PAPER: INF 3026 (DISTRIBUTED SYSTEM)

Q. No. 1. Explain different challenges in Distributed systems with real world examples. 10

OR

Why clock synchronization is essential in distributed system? Explain with appropriate examples.

10

Q. No. 2. How does mutual exclusion contribute to maintain data integrity in distributed systems?

Differentiate centralized and decentralized mutual exclusion algorithms. **10**

OR

Explain different techniques that are used for concurrency control in distributed transactions. **10**

PAPER: INF 3036 (COMPILER DESIGN)

Q. No. 1. The intermediate code generation phase is crucial for optimizing and targeting different machine architectures. Explain the importance of this phase with examples of intermediate representations. **10**

OR

Explain the fundamental differences between Deterministic Finite Automata and Non-Deterministic Finite Automata. Design a NFA for recognizing binary strings that contain the substring '101' and then convert this NFA into an equivalent DFA. **3+3+4=10**

Q. No. 2. Describe the process of parsing using context free grammars. Mention the differences between top-down and bottom-up parsing along with the type of errors that might occur during the parsing phase. Give examples to illustrate each parsing method. **4 + 6 = 10**

OR

Explain the construction of a predictive parsing table. What is its importance in compiler design especially in the context of LL(1) grammars? **6 + 4 = 10**

PAPER: INF 3066 (DATA MINING AND WAREHOUSING)

Q. No. 1. Define data mining and explain why it is important? How data mining can be applied in retail and finance industries. **6 + 4 = 10**

OR

Describe the characteristics and key components of a data warehouse architecture. What are the essential elements that are crucial for the efficient functioning of a data warehouse?

6 + 4 = 10

Q. No. 2. Explain the advantages and disadvantages of using Apriori algorithm for association rule mining. How does the algorithm determine frequent itemsets and what are the limitations of this approach? **5 + 5 = 10**

OR

Describe the role of distance metrics in clustering algorithms. Compare three different distance metrics used in clustering. Explain how the choice of distance metric can impact the clustering results. **3+4+3=10**

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