DIPLOMA OF COMPUTER APPLICATION

ASSIGNMENTS

DCA – 2nd SEMESTER

(SESSON 2024-2025)

Centre for Distance and Online Education
Guru Jambheshwar University of Science & Technology
Hisar - 125001

Course: Data Structures and Algorithms **Sem.: 2nd**
Code: DCA-21-T **Maximum Marks: 30**

Important Instructions
1. Attempt all questions from each assignment given below.
2. Each assignment carries 15 marks.
3. All questions are to be attempted in legible handwriting on plane white A-4 size paper and upload the scanned copy of the assignments on student's portal.

Max Marks: 3*5=15

ASSIGNMENT-I

1. Define linked list and also specify the memory representation for linked list in the computer.
2. What is stack. Write an algorithm/function to convert an expression from infix to postfix using stack with example.
3. Consider the following data and construct a binary tree using in-order and pre-order traversal.
   In-order traversal – 9, 8, 4, 2, 10, 5, 10, 1, 6, 3, 13, 12, 7
   Pre-order traversal – 1, 2, 4, 8, 9, 5, 10, 10, 3, 6, 7, 12, 13

Max Marks: 3*5=15

ASSIGNMENT-II

1. Explain heap in detail and also write an algorithm/function to construct a heap with an example.
2. Define Warshall's algorithms with example.
3. What internal and external sorting techniques? Write an algorithm/function for bubble sort technique.

Prepared By:
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CDOE, GJUS&T, Hisar

CENTRE FOR DISTANCE AND ONLINE EDUCATION
GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY, HISAR

Paper: Data Analytics   **Semester: 2nd**

Paper Code: DCA-22-T   **Max. Marks – 30**

Note: Important Instructions for submission of Online-Assignments.

- ➤ Attempt **all questions** *from the following both assignments. Each question carries equal marks.*
- ➤ **Typed and Xerox Copies of Assignments will not be accepted in any case.**
- ➤ *All questions are to be attempted in **legible handwriting and written** on plane white A-4 size paper along with front page and content table.*
- ➤ *Each page of the assignments must carry your **Enrolment Number**.*
- ➤ *The student needs to scan all pages of handwritten assignment in **PDF format** size, of maximum **data 10 MB** per assignment.*
- ➤ *The student needs to upload assignments on **students' portal**.*
- ➤ **Read "How to upload online Assignments**" *and check the Instructions for online submission of Assignments please.*
- ➤ *Each question carries 5 marks.*

ASSIGNMENT-1

Q1. What are the different objects in R. Provide examples of how each object is implemented in R.

Q2. Explain ten statistical functions. How would you compute and interpret statistical summaries (mean, median, mode, variance, and standard deviation) in R? How do you differentiate between a sample and a population when describing data?

Q3. What are the different types of plots used for visualizing data? Explain how to create and interpret a scatter plot and a box plot using R?

ASSIGNMENT-2

Q1. Explain the process of simple linear regression modeling. How would you estimate the coefficients and assess the accuracy of your model in R?

Q2. Explain the process of classification modeling. Describe decision trees classification algorithm?

Q3. Discuss how you would evaluate the accuracy of a classification model using metrics such as confusion matrix, sensitivity, specificity, and ROC curve.

Prepared By:

Ms Kapila Kundu

Assistant Professor (CSE)

CENTRE FOR DISTANCE AND ONLINE EDUCATION (CDOE)
GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY, HISAR

Course: Database Management System   **Semester: 2nd**

Paper Code: DCA-23T   **Total Marks=30**

Important Instructions
- Attempt all questions from each assignment given below.
- Each assignment carries 15 marks.
- All questions are to be attempted in legible handwriting on plane white A-4 sizepaper.

ASSIGNMENT-I

Q1. What is a database (DB) system? What are the key characteristics that distinguish a database approach?

Q2. Explain responsibilities of a Database Administrator (DBA)? Discuss how these responsibilities contribute to the effective management of a database system.

Q3. Define entity types, attributes, and relationships in the context of the E-R model. How can you represent these elements in an E-R diagram?

ASSIGNMENT-II

Q1. Explain the process of normalization. What are the need of normalization and different types of normal form in detail

Q2. Describe the ACID properties of transactions in database systems. Why are these properties essential for maintaining the integrity of a database?

Q3. Discuss the significance of locking techniques and time-stamp ordering in maintaining data consistency.

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Course: Python Programming   **Semester.: 2nd**
Paper Code: DCA-24-T   **Maximum Marks: 30**

Important Instructions:
1) Attempt all questions from each assignment given below.
2) Each assignment carries 15 marks.
3) All questions are to be attempted in legible handwriting on plane white A-4 size paper and same is uploaded through login your account.

ASSIGNMENT-I

Q1. What are identifiers in Python? State the rules for naming identifiers.

Q2. What are the different types of operators in Python? Write expressions using each type of operator and explain the output.

Q3. Explain the syntax and working of the while loop in Python. Write a Python program using a while loop to print the first 10 natural numbers.

ASSIGNMENT-2

Q1. What is inheritance? Write a program that demonstrates inheritance in Python.

Q2. Write SQL queries for Create, Insert, Select, Update, and Delete operations and explain how to execute them in Python.

Q3. Explain with functions like plot(), bar(), pie(), hist(), xlabel(), ylabel(), title(), and legend().

Prepared By:
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Paper: Communication Skills and Personality Development   **Semester: 2nd**
Paper Code: DCA-25-T   **Max. Marks – 30**

Note: Important Instructions for submission of Online-Assignments.

➤ *Attempt **all questions** from the following both assignments. Each question carries equal marks.*
➤ ***Typed and Xerox Copies of Assignments will not be accepted in any case.***
➤ *All questions are to be attempted in **legible handwriting and written** on plane white A-4 size paper along with front page and content table.*
➤ *Each page of the assignments must carry your **Enrolment Number**.*
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➤ ***Each question carries 5 marks.***

ASSIGNMENT-1

1. What are the key elements that define personality, and how do they influence personal grooming?

2. How do personal hygiene and social effectiveness contribute to business etiquette?

3. What are the 7 Cs of effective communication, and how do they enhance clarity in a message?

ASSIGNMENT-2

1. What are the different team roles, and how do they contribute to effective team behaviour during group discussions?

2. What are the key do's and don'ts to follow in a group discussion to ensure productive communication?

3. Why is practicing with a mock interview important for successful interview preparation?