DIPLOMA OF COMPUTER APPLICATION

ASSIGNMENTS

DCA – 2nd SEMESTER

(SESSON 2025-26)

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

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

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.

ASSIGNMENT-I

Q1. Define a Data Structure and explain its role in efficient problem-solving. Distinguish between Primitive and Non-Primitive data structures.

Q2. Define a Stack. Explain its basic operations. Explain the process of Infix to Postfix conversion using stack. Write the algorithm and illustrate with a suitable example.

Q3. Explain Circular Queue in detail. Why is it preferred over a linear queue? Describe its working, conditions for overflow/underflow, and algorithms for insertion and deletion.

ASSIGNMENT-II

Q1. Describe the Heapsort algorithm in detail. Explain all steps involved with a suitable example and analyze its time and space complexity.

Q2. Explain Dijkstra's Algorithm for finding the shortest path. Describe the steps, give an example, and analyze its complexity.

Q3. Explain Bubble Sort and Selection Sort algorithms. Write their steps, illustrate with examples, and analyze their time complexity.

Prepared By:
Dr. Neeraj Verma
Assistant Professor (CS)
CDOE, GJUS&T, Hisar

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GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY, HISAR

Paper: Data Analytics **Semester: 2nd**
Paper Code: DCA-22-T **Max. Marks 30**

Note: Important Instructions for 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.*
- *The student needs to scan all pages of handwritten assignment in **PDF format** size.*

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 different statistical functions and summaries in R?

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:
Dr. Kapila Devi
Assistant Professor (CS)
CDOE, GJUS&T, Hisar

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. Explain the concept of Database Management System (DBMS)? Describe the different types of database model?

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 is 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. Explain Concurrency Control in DBMS? Discuss different techniques such as locking techniques, time-stamp ordering and Multi-Version Techniques.

Prepared By:
Dr. Ritu
Assistant Professor (CS)
CDOE, GJUS&T, Hisar

CENTRE FOR DISTANCE AND ONLINE EDUCATION (CDOE)
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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. Explain the history and evolution of Python. Also Describe the key features of Python.

Q2. Explain modules and packages in Python. Describe how to create and import your own module with examples.

Q3. Explain loop control statements in Python. Discuss the while loop, for loop, and the use of the range() function with suitable examples.

ASSIGNMENT-2

Q1. Explain the concept of Object-Oriented Programming (OOP) in Python. Discuss its key features and advantages.

Q2. What is polymorphism in Python? Explain operator overloading and method overloading with examples.

Q3. Explain how to establish a database connection in Python. Explain CRUD operations (Create, Read, Update, Delete) in Python with databases. Illustrate each operation with examples.

Prepared By:
Dr. Neeraj Verma
Assistant Professor (CS)
CDOE, GJUS&T, Hisar

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GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY, HISAR

Paper: Communication Skills and Personality Development **Semester: 2nd**
Paper Code: DCA-25-T **Max. 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-1

Q1. What is Communication? Explain its types briefly. संचार क्या है? इसके प्रकारों को संक्षेप में समझाइए।

Q2. What are the main elements of Effective Communication? प्रभावी संचार के मुख्य तत्व क्या हैं?

Q3. What is Personality Development? Explain its importance. व्यक्तित्व विकास क्या है? इसके महत्व को समझाइए।

ASSIGNMENT-2

Q1. Differentiate between Verbal and Non-Verbal Communication. मौखिक और अमौखिक संचार में अंतर बताइए।

Q2. Why are Listening Skills important? Explain briefly. सुनने की कला क्यों महत्वपूर्ण है? संक्षेप में समझाइए।

Q3. How can Self-Confidence be improved? Write any three methods. आत्मविश्वास कैसे बढ़ाया जा सकता है? कोई तीन उपाय लिखिए।

Prepared By:
Mr. Ashok Kumarr
Assistant Professor,
CDOE, GJUS&T, Hisar