Uttar Pradesh Rajarshi Tandon Open University

School of Science,Assignment Session 2023-24

Course Code: **UGCS 103**	Course Title: **Data Structure**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words

1. What is a Stack? What are the two operations of Stack? Write postfix from of the expression –A+B-C+D?

2. . What is a Queue? Write down the operations that can be done with queue data structure?

3. What is a linked list? What are the different ways to implement list?. What are the advantages in the array implementation of list? Name the two fields of Linked list?

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

4. . What is a Priority Queue?
5. What is a circular queue?

6. What is a doubly linked list?
7. Name the three fields of Doubly Linked list?
8. Define double circularly linked list?
9. What is the need for the header?

Uttar Pradesh Rajarshi Tandon Open University

School of Science,Assignment Session 2023-24

Course Code: **SBSCS01**	Course Title: **Discrete Mathematics**	Maximum Marks : 30

Section 'A'
Long answer questions　　　　　Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words

1. What is the proposition? Explain different logical connectives used in propositions with the help for example
2. Draw a Venn diagram to represent followings: (3)
    i)　　(A ∩ BU C) ~A
    ii)　　(A U B U C) ∩ (B ∩ C)

3. Explain the following types of relations with the help of suitable examples.

    a. Reflexive

    b. Anti symmetric

    c. Transitive
    d. Equivalence

Section - B
Short answer questions　　　　　Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

4. Express the Boolean expression $xyz' + y'z + xz'$ in a sum of product form.

5. How many numbers are there between 100 and 1000 such that 7 is in the unit's place ?

6. How many permutations are there for the word ASSOCIATION ?

7. Prove De Morgan's laws using truth table.

Uttar Pradesh Rajarshi Tandon Open University

School of Science,Assignment Session 2023-24

Course Code: **UGCS 104**	Course Title: Introduction to Database Management System	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words

1. Draw and explain the detailed system architecture of DBMS. What are the advantages of DBMS?

2. Explain in detail about various key constraints used in database system. Explain the importance of Null values in Relational Model

3. Discuss the ACID properties of a database transaction with appropriate examples. Draw transaction state diagram and describe each state that a transaction goes through during its execution.

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

4. What is DBA? Mention the functionalities of DBA

5. How are views created and dropped? Explain, how the views are implemented and updated

6. Discuss 3-tier architecture with necessary diagram and suggest an example application

7. Explain in detail about internal hashing Techniques.

8. Discuss in detail about cluster and Multilevel indexes.

9. State BCNF. How does it differ from 3NF?

Uttar Pradesh Rajarshi Tandon Open University

School of Science,Assignment Session 2023-24

Course Code: DCECS105	Course Title: Computer Network	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words

1. Explain the OSI reference model with neat diagram.

2. Explain the various types of multiplexing

3. How does BGP resolve count to infinity problem?. Explain the operation of hierarchical routing though illustration

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

4. Discuss any two benefits of SSL.

5. What is spread spectrum? What are the two types of spread spectrum used in wireless data network? Elaborate.

6. What is silky windows syndrome?

7. Find the net id and host id of the following IP addresses.
114 .35 .2 . 7
133 .57 .6 . 8
207 .34 .54 . 12

8. What is microwave transmission?

9. For n devices in a network, what is the number of cable links, number of full duplex channels for a mesh topology?

Course Code: DCECS106	Course Title: **Operating system**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words

1. Define Operating Systems and discuss its role from different perspectives.List out different services of Operating Systems and explain each service

2. What is a process? Draw and explain process state diagram

3. What is paging and swapping? Explain the paging hardware?

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

4. What is demand paging? Explain

5. What are protection goals and principles

6. What do you mean by a address binding? Explain with the necessary steps, the binding Of instructions and data to memory addresses

7. Explain the resource allocation graph

8. Explain the methods for deadlock prevention

9. What are threads?

Uttar Pradesh Rajarshi Tandon Open University

School of Science,Assignment Session 2023-24

Course Code: DCECS108	Course Title: **C++ AND OBJECT ORIENTED PROGRAMMING**	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words

1. Explain, with suitable examples, the advantage of object oriented language overstructured programming language.

2. What is Inheritance ? Explain its advantages. Also explain with examplehow a subclass is derived from a super classin C++
3. What is constructor ? Explain constructor overloading in C++ with an example.

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words

4. Differentiate between method overloading and method overriding with an example

5. What is Inheritance ?

6. Write a C++ program to find the length of a given string.

7. What is Friend function in C++ ?

Uttar Pradesh Rajarshi Tandon Open University

School of Science,Assignment Session 2023-24

Course Code: DCECS109	Course Title: Software Engineering	Maximum Marks : 30

Section 'A'
Long answer questions   Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words

1. Write the IEEE definition of software engineering. Demonstrate your understanding of umbrella activities of a Software process.If you have to develop a word processing software product, what process model will you choose? Justify your answer and examine.

2. What do mean by software Testing? Differentiate verification and validation. Give an example.

3. What are SDLC in water fall model? .List two deficiencies in waterfall model. Which process model do you suggest to overcome each deficiency?

Section - B
Short answer questions   Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words

4. .List the characteristics of software contrasting it with characteristics of hardware.

5. Explain How do we create a process that can manage unpredictability?

6. . Identify the human factors considered for an agile software development
7. Is it possible to realize Win-Win spiral model for software. Analyse
8. Summarize the pros and cons of iterative software development model.
9. Define agile process .Give any two agile principles.