

**Shri Shankaracharya Institute of Professional Management & Technology****Department of Computer Science & Engineering (AI)**Class Test-II Semester: 4th Session: January- June 2023 Month-June 2023**B. Tech. Computer Science & Engineering (AI)****Subject: Discrete Structure Code: B109411(014)****Time Allowed: 2 Hours****Max Marks: 40****Note: -All Questions Compulsory.**

Q. N.	Question	Marks	Levels of Bloom's Taxonomy	COs
Q1	Define equivalence relation. If R is an equivalence relation in the set A , then prove that R^{-1} is also an equivalence relation.	[2+6]	Remember & Apply	CO2
Q2	If $f: X \rightarrow Y$ and $g: Y \rightarrow Z$ be one-one onto mapping, then prove that the mapping $g \circ f: X \rightarrow Z$ is also one-one onto and $(g \circ f)^{-1} = f^{-1} \circ g^{-1}$.	[8]	Apply	CO2
Q3	Explain the concept of mathematical induction and apply to prove $P(n) = \frac{1}{2} + \frac{1}{2^2} + \frac{1}{2^3} + \dots + \frac{1}{2^n} = 1 - \frac{1}{2^n}$	[2+6]	Remember & Apply	CO3
Q4	Find all the solution by recurrence relation: $a_n = 5a_{n-1} - 6a_{n-2} + 2^n + 3n$	[8]	Apply	CO3
Q5	Write Pigeon Hole principle. What is the minimum number of students required in a class to be sure that at least five will receive the same grade if there are four possible grades A,B,C and D.	[2+6]	Remember & Apply	CO3

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Shri Shankaracharya Institute of Professional Management & Technology

Department of Computer Science and Engineering (AI)

Class Test – II, Session- March-June 2023

Sem- B.Tech. 4th Sem, Subject- Database Management System

Max Marks: 40

Time Allowed: 2 hrs.

Note: Attempt any two questions from each section.

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs
Section 1				
Q1	Differentiate between Procedural and Non Procedural Language.	4	Understand	CO1
Q2	What do you mean by integrity constraints and explain its types.	4	Understand	CO1
Q3	What is a View? What are the advantages and disadvantages of using a view?	4	Understand	CO1
Section 2				
Q4	What is functional dependency? Explain different types of functional dependency. Also explain the need of normalization.	8	Understand	CO1
Q5	Explain normalization. How BCNF is different from 3NF. Explain with example.	8	Understand	CO1
Q6	What is Join dependency? Explain project join normal form with example.	8	Understand	CO1
Section 3				
Q7	What are the various stages of Query Processing? Also, explain the structure of query optimizer.	8	Understand	CO1
Q8	Define Transaction. Write properties and states of Transaction.	8	Understand	CO1
Q9	Explain serializability. Also, explain the concept of conflict serializability and view serializability.	8	Understand	CO1



Shri Shankaracharya Institute of Professional Management & Technology

Department of Computer Science and Engineering (AI)

Class Test – II, Session- January-June 2023, Date-27/06/2023

Sem- B.Tech.4th Sem

Subject- Computer System Architecture

Subject Code : B109414(022)

Max Marks: 40

Time Allowed:2 hrs.

Note: All Questions are Compulsory.

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs
Q1	Multiply the given two numbers $(5)_{10}$ & $(-4)_{10}$ using Booths Algorithm. Explain if any special processing is required for negative numbers Booth Algorithm.	08	Applying	CO2
Q2	Discuss in brief the concept of memory hierarchy. Explain its relevance to computer systems design using suitable examples.	08	Understanding	CO3
Q3	Explain the process of address translation in a virtual memory system, also explain why the page size should be neither very small nor very large.	08	Understanding	CO3
Q4	Explain the concept of memory mapped I/O & I/O mapped I/O. also explain how we can combine memory & I/O address space.	08	Understanding	CO4
Q5	Draw and explain the implementation of four-stage instruction pipelining.	08	Applying	CO5



Shri Shankaracharya Institute of Professional Management & Technology

Department of Computer Science and Engineering (AI)

Class Test – II, Session- January-June 2023, Date-27/06/2023

Sem- B.Tech.4th Sem

Subject- Computer System Architecture

Subject Code : B109414(022)

Max Marks: 40

Time Allowed:2 hrs.

Note: All Questions are Compulsory.

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs
Q1	Multiply the given two numbers $(5)_{10}$ & $(-4)_{10}$ using Booths Algorithm. Explain if any special processing is required for negative numbers Booth Algorithm.	08	Applying	CO2
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Shri Shankaracharya Institute of Professional Management & Technology

Department of CSE (Artificial Intelligence)

Class Test – II, Session - Jan-June 2023, Month-June

Sem-CSE(AI) 4th Subject- Object-Oriented Programming(with Java) Code- B109413(022)

Time Allowed: 2 hrs Max Marks: 40

Note: - All Questions are Compulsory.

Q. N.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	What is Thread? Explain different thread creation mechanism each with suitable example.	[8]	Understanding	CO3
2.	Explain string and string buffer class. What is mutable and immutable in java? Write a program in java to find first non repeating character in given string.	[8]	Understanding + Applying	CO3
3.	Define Byte Stream and Character Stream. Write a program to read the contents of file. Or Write a program to demonstrate notify (), wait () and joint ().	[8]	Remember + Applying	CO3
4.	What are the various types of JDBC drivers? Write steps for Java Database Connectivity using a sample program.	[8]	Understanding	CO4
5.	Explain event delegation model with suitable java program. Or What are Sockets in Java? Explain using Java program the use of TCP and UDP Sockets to send and receive data.	[8]	Understanding	CO4



Shri Shankaracharya Institute of Professional Management & Technology

Department of Computer Science and Engineering (AI)

Class Test – II , Session- January-June2023

Sem- B.Tech.4th Sem

Subject- Design and Analysis of Algorithm

Time Allowed:2 hrs.

Max Marks: 40

Note: Attempt any five. Each question carries equal marks.

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs																									
Q1	Find optimal paranthesization for multiplication of matrices having dimensions <2,3,4,5,6,7>	8	Applying	CO2																									
Q2	State graph coloring problem and explain in detail how to solve it with a suitable example.	8	Understanding	CO1																									
Q3	(A) How backtracking technique is differing from branch and bound technique?	2	Applying	CO2																									
	(B)Find the longest common subsequence for following string. X:A B C B D A B Y: B D C A B A	6																											
Q4	What is Hamiltonian cycle problem? explain with suitable example.	8	Understanding	CO1																									
Q5	What is LC branch and bound technique? Solve the following 0/1 knapsack problem using LC branch and bound technique.	8	Applying	CO2																									
	<table border="1"> <thead> <tr> <th>Item</th> <th>I₁</th> <th>I₂</th> <th>I₃</th> <th>I₄</th> </tr> </thead> <tbody> <tr> <td>profit</td> <td>10</td> <td>10</td> <td>12</td> <td>18</td> </tr> <tr> <td>Weight</td> <td>2</td> <td>4</td> <td>6</td> <td>9</td> </tr> </tbody> </table>				Item	I ₁	I ₂	I ₃	I ₄	profit	10	10	12	18	Weight	2	4	6	9										
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Q6	Solve following TSP problem using Branch and bound technique. <table border="1"> <tr><td>∞</td><td>20</td><td>30</td><td>10</td><td>11</td></tr> <tr><td>15</td><td>∞</td><td>16</td><td>4</td><td>2</td></tr> <tr><td>3</td><td>5</td><td>∞</td><td>2</td><td>4</td></tr> <tr><td>19</td><td>6</td><td>18</td><td>∞</td><td>3</td></tr> <tr><td>16</td><td>4</td><td>7</td><td>16</td><td>∞</td></tr> </table>	∞	20	30	10	11	15	∞	16	4	2	3	5	∞	2	4	19	6	18	∞	3	16	4	7	16	∞	8	Applying	CO2
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