

29

Guru Narak Dev Engineering College, Ludhiana
Department of Computer Science & Engineering

Program	B.Tech.(CSE)	Semester	4
Subject Code	PCCS-103	Subject Title	Discrete Mathematics
Mid Semester Test (MST) No.	2	Course Coordinator(s)	Prof. Manpreet Kaur Mand Prof. Jasdeep Kaur
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST	30 th May, 2022	Roll Number	

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Illustrate an example of a skew field and field, which is not an integral domain.	CO3, L2	2
Q2	There are two shopping malls next to each other, one with sign board as "Good items are not cheap" and second with sign board as "Cheap items are not good". Examine whether these two statements means same or different?	CO6, L4	2
Q3	i) Find the distinct left COSETS of {0,3, 6, 9} in the group $(Z_{12}, +)$. ii) Identify the DNF of the following: $(P \rightarrow Q) \wedge (\sim P \rightarrow Q)$	CO2, CO6, L1, L3	4
Q4	Consider $G = \{1, 5, 7, 11, 13, 17\}$ under multiplication modulo 18. a) Build the multiplication table of G. b) Find 5^{-1} and 17^{-1} . c) Find the order and group generated by: (i) 5, (ii) 13. d) Identify whether G is cyclic?	CO2, L1, L3	4
Q5	Simplify the following Sum-of-Product expressions with the help of K-maps. (a) $E1 = wx'yz' + wxy'z' + wx'yz + wx'yz' + wx'y'z' + w'xyz + w'xyz' + w'xy'z' + w'xy'z + w'x'yz' + w'x'y'z'$ (b) $E2 = y't + y'z't + x'y'zt + yzt'$	CO1, CO5, L4	4
Q6	(i) Choose the shortest distance between source a and destination z using Dijkstra's algorithm for following graph: (ii) List the conditions under which two groups could be isomorphic.	CO2, CO3, L5, L4	6, 2

Guru Nanak Dev Engineering College, Ludhiana
Department of Computer Science & Engineering

Program	B.Tech.(CSE)	Semester	4 th
Subject Code	PCCS 106	Subject Title	Data Structures
Mid Sem Test (MST) No.	2	Course Coordinator(s)	Pf. Shailja Pf. Supreet Kaur
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST	2/6/2022	Roll Number	2004558

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks																																
Q1	What are the applications of linked list in dynamic storage management?	CO3, L1	2																																
Q2	Consider the following AVL tree. Modify and show the AVL tree after insertion of 70. <div style="text-align: center; margin: 10px 0;"> <pre> graph TD 60((60)) --- 20((20)) 60 --- 100((100)) 100 --- 80((80)) 100 --- 120((120)) </pre> </div>	CO5, L6	2																																
Q3	What are the ways to insert a node in Linked list? Demonstrate the algorithm for inserting a node before a given node.	CO2, CO3, L1,	4																																
Q4	The postorder traversal of a binary tree is 8,9,6,7,4,5,2,3,1. The inorder traversal of the same tree is 8,6,9,4,7,2,5,1,3. Create the binary tree. What is the height of the binary tree?	CO6, L6	4																																
Q5	Construct a max heap, represented by the array: 20, 10, 20, 40, 17, 16, 8, 15, 4. Also discuss the insertion operation.	CO6, L6	4																																
Q6	Consider the following graph. <div style="display: flex; align-items: center; margin: 10px 0;"> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>1</td><td>2</td><td>3</td><td>4</td></tr> <tr><td>2</td><td>1</td><td>5</td><td></td></tr> <tr><td>3</td><td>1</td><td>5</td><td></td></tr> <tr><td>4</td><td>1</td><td>6</td><td>7</td></tr> <tr><td>5</td><td>2</td><td>3</td><td>8</td></tr> <tr><td>6</td><td>4</td><td>8</td><td></td></tr> <tr><td>7</td><td>4</td><td>8</td><td></td></tr> <tr><td>8</td><td>5</td><td>6</td><td>7</td></tr> </table> <div style="margin-left: 20px;"> </div> </div> <p>Show the pictorial representation of the above graph. Explain the Depth first traversal algorithm to traverse any graph. Also apply the Depth first traversal algorithm on the given and traverse the graph when node 1 is the starting node.</p>	1	2	3	4	2	1	5		3	1	5		4	1	6	7	5	2	3	8	6	4	8		7	4	8		8	5	6	7	CO5, L5	8
1	2	3	4																																
2	1	5																																	
3	1	5																																	
4	1	6	7																																
5	2	3	8																																
6	4	8																																	
7	4	8																																	
8	5	6	7																																

KCS

Guru Nanak Dev Engineering College, Ludhiana

Department of Computer Science & Engineering

Program	B.Tech.(CSE)	Semester	4 th
Subject Code	MCCS-101	Subject Title	Environmental Science
Mid Semester Test (MST) No.	II	Course Coordinator(s)	Dr. Vivek Thapar Dr. Inderjit Singh Dr. Hardeep Singh Kang
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST	07 th June, 2022	Roll Number	2004558

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	What is biodiversity? Explain briefly.	CO5, L1	2
Q2	Describe the various problems and concerns in context with rehabilitation of people.	CO2, L4	2
Q3	Elaborate the possible solutions for sustainable development.	CO3, CO4, L2	4
Q4	Identify different threats to biodiversity with suitable examples.	CO5, L3	4
Q5	Discuss the effects of population growth on environment.	CO4, L4	4
Q6	Discuss the causes, effects and control measures of air and water pollution.	CO3, CO4, L4	8

Course Outcomes (CO)

Guru Nanak Dev Engineering College, Ludhiana
Department of Computer Science and Engineering

Program	B.Tech.(CSE)	Semester	4
Subject Code	PCCS-107	Subject Title	Software Engineering
Mid Semester Test (MST) No.	2	Course Coordinator(s)	Kiran Jyoti Jasmine Kaur Palak
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST	6 th June, 2022	Roll Number	2004558

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks																																												
Q1	Explain the role of cohesion and coupling in good software design? Give example.	CO3, L2	2																																												
Q2 ✓	Compare the role of driver and stub in integration testing. Explain with example.	CO5, L4	2																																												
Q3 ✓	<p>a) Examine and calculate cyclomatic complexity for the given code. Draw a Control flow graph for it.</p> <ol style="list-style-type: none"> 1. IF A = 354 2. THENIF B > C 3. THEN A = B 4. ELSE A = C 5. ENDIF 6. ENDIF 7. PRINT A <p>b) Design statement coverage-based test suite for the following Euclid's GCD computation program</p> <pre> int computeGCD(x,y) int x,y; { 1 while (x != y){ 2 if (x>y) then 3 x=x-y; 4 else y=y-x; 5 } 6 return x; } </pre> <p style="margin-left: 20px;"><i>A → 354</i> <i>B → 354</i></p>	CO5, L1	4																																												
Q4	<p>Show the following activities if you are the project manager of a software project.</p> <p>a) Draw the Activity Network representation of the project.</p> <p>b) Determine ES, EF and LS, LF for every task.</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Activity No.</th> <th>Activity Name</th> <th>Duration (weeks)</th> <th>Immediate Predecessor</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Obtain requirements</td> <td>4</td> <td>-</td> </tr> <tr> <td>2.</td> <td>Analyse operations</td> <td>4</td> <td>-</td> </tr> <tr> <td>3.</td> <td>Define subsystems</td> <td>2</td> <td>1</td> </tr> <tr> <td>4.</td> <td>Develop database</td> <td>4</td> <td>1</td> </tr> <tr> <td>5.</td> <td>Make decision analysis</td> <td>3</td> <td>2</td> </tr> <tr> <td>6.</td> <td>Identify constraints</td> <td>2</td> <td>5</td> </tr> <tr> <td>7.</td> <td>Build module 1</td> <td>8</td> <td>3, 4, 6</td> </tr> <tr> <td>8.</td> <td>Build module 2</td> <td>12</td> <td>3, 4, 6</td> </tr> <tr> <td>9.</td> <td>Build module 3</td> <td>18</td> <td>3, 4, 6</td> </tr> <tr> <td>10.</td> <td>Write report</td> <td>10</td> <td>6</td> </tr> </tbody> </table>	Activity No.	Activity Name	Duration (weeks)	Immediate Predecessor	1.	Obtain requirements	4	-	2.	Analyse operations	4	-	3.	Define subsystems	2	1	4.	Develop database	4	1	5.	Make decision analysis	3	2	6.	Identify constraints	2	5	7.	Build module 1	8	3, 4, 6	8.	Build module 2	12	3, 4, 6	9.	Build module 3	18	3, 4, 6	10.	Write report	10	6	CO3, L3	4
Activity No.	Activity Name	Duration (weeks)	Immediate Predecessor																																												
1.	Obtain requirements	4	-																																												
2.	Analyse operations	4	-																																												
3.	Define subsystems	2	1																																												
4.	Develop database	4	1																																												
5.	Make decision analysis	3	2																																												
6.	Identify constraints	2	5																																												
7.	Build module 1	8	3, 4, 6																																												
8.	Build module 2	12	3, 4, 6																																												
9.	Build module 3	18	3, 4, 6																																												
10.	Write report	10	6																																												

	11. Integration and test 8 (7,8,9) 12. Implementation 2 (10,11)		
Q5	Classify following terms by taking suitable example. A). Software Re-engineering B). forward engineering C). reverse engineering	CO6, L4	4
Q6	Summarize the purpose of data flow diagrams how they are different from structure chart diagrams. Draw context level and level-1 DFD for library Management System and draw the structure chart diagram for the same.	CO3, L5	8

Course Outcomes (CO)
Students will be able to -

1	Plan a software engineering process life cycle, including the specification, design, and implementation.
2	Elicit, analyze and specify software requirements through a productive working relationship with various stakeholders of the project.
3	Analyze and translate a specification into a design, and then realize that design practically, using an appropriate software engineering methodology.
4	Develop the code from the design and effectively apply relevant standards for quality management and practice.
5	Formulate a testing strategy for a software system, employing techniques such as unit testing, test driven development and functional testing.
6	Identify modern engineering tools necessary for software reengineering and reverse engineering.

RBT Classification	Lower Order Thinking Levels (LOTS)			Higher Order Thinking Levels (HOTS)		
	L1	L2	L3	L4	L5	L6
RBT Level Number						
RBT Level	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating

Guru Nanak Dev Engineering College, Ludhiana
Department of Computer Science and Engineering

Program	B.Tech.(CSE)	Semester	4
Subject Code	PCCS-105	Subject Title	Operating Systems
Mid Semester Test (MST) No.	2	Course Coordinator(s)	Er. Gurjeet Kaur Er. Harkomalpreet Kaur
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST	1 st June, 2022	Roll Number	2004558

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Classify the difference between paging and segmentation	CO1, CO2, L2	2
Q2	Categorize the difference between the Contiguous, Linked and Indexed file allocation.	CO2, L4	2
Q3	Describe how deadlock can be avoided? Explain with algorithm.	CO3, L1	4
Q4	Explain the concept of Semaphores. How are they helpful in process synchronization? Explain with suitable example.	CO5, L2	4
Q5	Consider a reference string: 4, 7, 6, 1, 7, 6, 1, 2, 7, 2 the number of frames in the memory is 3. Find out the number of page faults respective to: 1. Optimal Page Replacement 2. FIFO Replacement 3. LRU Replacement	CO6, L4	4
Q6	Design the solution for the following criteria. Suppose that a disk drive has 500 cylinders, numbered 0 to 4999. The drive is currently serving a request at cylinder 143, and the previous request was at cylinder 125. The queue of pending requests, in FIFO order, is: 86, 1470, 913, 1774, 948, 1509, 1022, 1750, 135 Starting from the current head position, Evaluate the total distance (in cylinders) that a disk arm moves to satisfy all the pending requests for each of the following disk scheduling algorithms. a) FCFS b) SSTF c) C-SCAN d) C-LOOK	CO6, L5	8

Course Outcomes (CO)