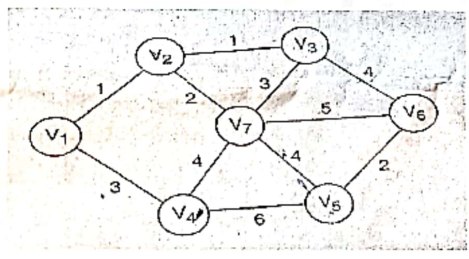


**Department of Computer Science and Engineering**

Program	B.Tech.(CSE)	Semester	4
Subject Code	PCCS-103	Subject Title	Discrete Mathematics
Mid Semester Exam (MSE) No.	2	Course Coordinator(s)	Dr. Manpreet Kaur Mand Prof. Shailja Sharma
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MSE	22/04/2024	Roll Number	2203482

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Prove that the identity element of every group is unique.	CO5, L2	2
Q2	Can a graph with 7 seven vertices be isomorphic to its compliment? Justify.	CO6, L4	2
Q3	The set of real numbers of the form $X = [a + b\sqrt{2}, \text{ where } a, b \in \mathbb{Z}]$ is an integral domain. Is it a field?	CO5, L3	4
Q4	Make use of K-Map to find the minimal sum for $f(x,y,z,t) = xy' + xyz + x'y'z' + x'yzt'$	CO2 L3	4
Q5	Consider $G = \{1, 5, 7, 11, 13, 17\}$ under multiplication modulo 18. a) Find multiplication table of G. b) Find the order and subgroups generated by 5 and 13. c) Is G cyclic? Justify your answer.	CO5, L5	4
Q6	Determine the Shortest path from V1 to V5 using any suitable algorithm. 	CO6, L4	8

**Course Outcomes (CO)**

Students will be able to

- 1 Apply sets, relations and functions to solve problems.
- 2 Construct mathematical proofs to verify the correctness of an argument using propositional logic, predicate logic and truth tables.
- 3 Apply counting techniques and combinatorics to determine discrete probability.
- 4 Solve problems involving recurrence relations and generating functions.
- 5 Prove elementary properties of algebraic structures in analysis and interpretation of data to provide valid conclusions.
- 6 Make use of graphs and trees to model real world problems.

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

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

Program	B-Tech CSE	Semester	4 <sup>th</sup>
Subject Code	PCCS-104	Subject Title	Computer Architecture & Microprocessor
Mid Semester Exam (MSE) No.	2	Course Coordinator(s)	Er. Vandna Er. Lakhvir Kaur Grewal Er. Harminder Kaur
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MSE	23 <sup>rd</sup> April., 2024	Roll Number	2203482

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	How memory mapped I/O is different from peripheral mapped I/O?	CO6, L2	2
Q2	Identify the addressing modes used in the following instructions: a. MVI M,45H                      b. POP H	CO4, L4	2
Q3	Discuss the functions of following 8085 instructions with examples: DAD, RIM, SPHL, LHLD, ANI, RAL, JNC, PUSH	CO5, L2	4
Q4	Compare and contrast RISC and CISC architecture.	CO4, L2	4
Q5	Construct a circuit for interfacing of keyboard and seven segment LED display.	CO6, L4	4
Q6	Design and analyze the functional block diagram of 8085 microprocessor in detail.	CO5, L4	8

Course Outcomes (CO) Students will be able to....

1.	Explain the binary number system and its representations in computer system.
2.	Implement Arithmetic, Logical and Shift micro operations using Register Transfer Language.
3.	Describe the structure and organization of basic computer using instruction set architecture.
4.	Elaborate instruction formats, RISC and CISC architectures and addressing modes.
5.	Solve basic binary math operations through programming of 8085 microprocessor.
6.	Make use of memory mapped and I/O mapped interfacing in microprocessor applications

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

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

<b>Program</b>	B.Tech.(CSE)	<b>Semester</b>	4 <sup>th</sup>
<b>Subject Code</b>	PCCS-105	<b>Subject Title</b>	Operating Systems
<b>Mid Semester Examination (MSE) No.</b>	2	<b>Course Coordinator(s)</b>	Prof. Goldendeep Kaur Dr. Daljit Singh Prof. HarkomalpreetKaur
<b>Max. Marks</b>	24	<b>Time Duration</b>	1 hour 30 minutes
<b>Date of MSE</b>	24 <sup>th</sup> April, 2024	<b>Roll Number</b>	2203482

**Note:** Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Classify the difference between fixed partition and variable partition in memory allocation.	CO4, L2	2
Q2	Describe mutual exclusion and race conditions for inter-process communication.	CO3, L3	2
Q3	A system uses 3 page frames for storing process pages in main memory. It uses the First in First out (FIFO) page replacement policy. Assume that all the page frames are initially empty. What is the total number of page faults that will occur while processing the page reference string given below- 4, 7, 6, 1, 7, 6, 1, 2, 7, 2 *Also calculate the hit ratio and miss ratio.	CO4, L2	4
Q4	Explain the different file operations in detail.	CO5, L2	4
Q5	Contrast deadlock prevention and avoidance with examples.	CO3, L4	4
Q6	Suppose that a disk drive has 500 cylinders, numbered 0 to 4999 the drive is currently serving a request cylinder 143, the previous request was at 125, the queue of pending requests in FIFO order, is : 86, 1470, 913, 1794, 948, 1509, 1022, 1750, 130: Starting from a current position, what is the total distance that the disk arm moves to satisfy all the pending requests for each of the following disk scheduling algorithms? 1. SCAN 2. C-SCAN 3. LOOK 4. C-LOOK	CO3, CO6, L4	8

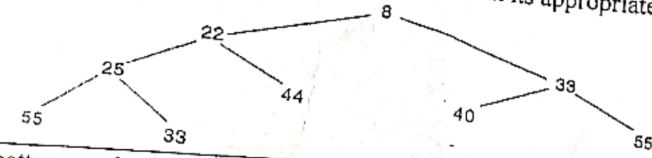
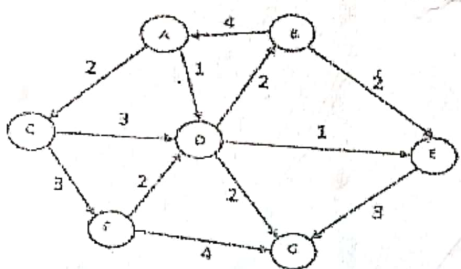
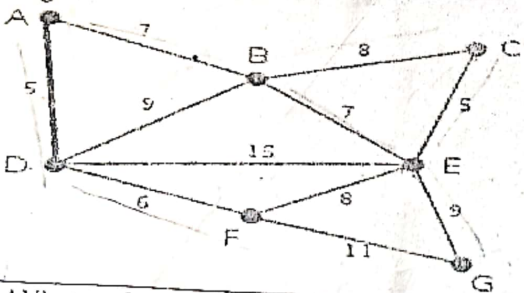
**Course Outcomes (CO) Students will be able to**

- 1 Explain the types and functions of operating systems.
- 2 Evaluate different scheduling Techniques and list resources involved in process creation and management
- 3 Discuss inter-process communication, deadlock prevention, avoidance, and detection and recovery techniques. Understand the mechanisms of OS to handle processes and threads and their communication
- 4 Comprehend the mechanisms used in memory management
- 5 Apply file management mechanisms for efficiency and performance.
- 6 Make use of disk scheduling algorithms

RBT Classification	Lower Order Thinking Levels (LOTS)			Higher Order Thinking Levels (HOTS)		
	L1	L2	L3	L4	L5	L6
RBT Level Number						

Program	B.Tech.(CSE)	Semester	4
Subject Code	PCCS-106	Subject Title	Data Structures and Algorithms
Mid Semester Examination (MSE) No.	2	Course Coordinator(s)	Jasmine Kaur Goldendeep Kaur Priti Aggarwal
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MSE	25-04-2024	Roll Number	2203482

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Consider the following min Heap. Insert an element "11" at its appropriate place. 	CO5, L3	2
Q2	'Hashing is better search technique than linear search and binary search'. Comment.	CO2, L4	2
Q3	Apply Dijkstra's algorithm to the following graph to find the shortest path from source A. Also describe all the nodes on the shortest path from A to F. 	CO5, L3	4
Q4	An initial array is given as 54, 26, 93, 17, 77, 31, 44, 55, 20 Perform quick sort procedure and produce the array in an ordered form and write its efficiency.	CO6, L2	4
Q5	Construct a tree that connects all the vertices in a graph in a way that minimizes the total weight of the edges. 	CO5, L6	4
Q6	a) Create an AVL tree for the following sequence of numbers. Also mention name of action taken. 200, 400, 800, 900, 850, 700, 950, 100, 150 b) Draw a binary tree by considering the following traversals: Preorder: G,B,Q,A,C,K,F,P,D,E,R,H Inorder: Q,B,K,C,F,A,G,P,E,D,H,R	CO5, L6 CO5, L4	4 4

Course Outcomes (CO)

Students will be able to

CO1	Identify the appropriate data structure to provide solution with reduced space and time complexity.
CO2	Implement the storage of linear data in arrays, linked list and hashing technique.
CO3	Utilize stacks for solving problems that works on the principle of recursion.
CO4	Make use of queues in solving problems having sequential processing.
CO5	Implement the concept of non-linear data structures-tree and graph in real world problems
CO6	Analyse efficiency of different algorithms for searching and sorting.

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

Program	B.Tech.(CSE)	Semester	4 <sup>th</sup>
Subject Code	PCCS-107	Subject Title	Software Engineering
Mid Semester Exam (MSE) No.	2	Course Coordinator(s)	Dr. Kiran Jyoti Er. Jasdeep Kaur Dr. Hardeep Singh Kang
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MSE	26 <sup>th</sup> April, 2024	Roll Number	2203482

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Why stub and driver modules are required in integration testing?	CO5, L2	2
Q2	"Is verification and validation the same thing?" comment and justify.	CO5, L4	2
Q3	How Cyclomatic Complexity is useful in testing? Draw Control flow Graph and calculate Cyclomatic Complexity of following code: A=10 IF B>C Then A=B Else A=C END IF Print A Print B Print C	CO5, L3	4
Q4	Discuss the importance of Software Maintenance with its types? Differentiate reverse and forward engineering with its example.	CO6, L2	4
Q5	"For good software design modules must have low coupling and high cohesion." Comment and justify. Draw Context level DFD and Level 1 DFD of Library Management System with data dictionary.	CO4, L4	4
Q6	a) "Branch coverage guarantees statement coverage" Comment and justify your answer. Explain system testing in detail. b) Identify the problems that would occur if the engineers in a organization does not adhere to coding standards? Write any five coding standards.	CO5, L4	8

**Course Outcomes (CO)**

Students will be able to

CO1	Explain software process models and fundamentals of software engineering to use suitable process model for a given scenario.
CO2	Analyse software requirements for designing SRS documents
CO3	Analyze and translate a specification into a design, and then realize that design practically, using an appropriate software engineering methodology.
CO4	Apply software design strategies to translate SRS to software design
CO5	Apply coding standards and testing techniques for a given software design.
CO6	Recognize the importance of software maintenance, PSP, Six Sigma and re-engineering

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

Guru Nanak Dev Engineering College, Ludhiana			
Department of Computer Science and Engineering			
Program	B.Tech. (CSE)	Semester	4 <sup>th</sup> (A, B & C)
Subject Code	MCCS-101	Subject Title	Environmental Sciences
Mid Semester Exam (MSE) No.	2	Course Coordinator(s)	Pf. Kuljit Kaur Pf. Jaswant Singh Er. Jagjit Kaur
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MSE	26/04/2024	Roll Number	2203482

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Explain Women and Child Welfare Act.	L2, CO3	2
Q2	Analyze how the depletion of the ozone layer affects global climate patterns, and what are the potential long-term consequences for ecosystems and human health?	L4, CO4	2
Q3	Discuss the immediate and long-term consequences of the nuclear accident on human health, the environment, and the surrounding communities?	L2, CO4	4
Q4	Make use of solid waste management concept to design comprehensive plan for an urban area facing rapid population growth, including strategies to reduce, reuse, and recycle materials.	L3, CO2	4
Q5	Suppose you are tasked with evaluating the impact of noise pollution in a densely populated urban area. Describe the key factors you would consider in your assessment and how you would measure the severity of noise pollution in different locations within the city. Additionally, propose strategies for mitigating noise pollution and improving the overall quality of life for residents in the area. How would you prioritize these strategies based on their effectiveness and feasibility?	L5, CO1	4
Q6	Imagine a scenario where a large city plans to expand into nearby forested areas, which are known to contain several endangered species. As an environmental consultant, you are tasked with assessing the potential impacts of this urban expansion. What considerations and recommendations would you make to balance development needs with biodiversity conservation? Also, discuss species, genetic and ecosystem biodiversity.	L4, CO5	8

Course Outcomes (CO) Students will be able to....

1.	Measure environmental variables and interpret results.
2.	Evaluate local, regional and global environment topics related to resource use and management.
3.	Propose solutions to environmental problems related to resource use and management.
4.	Interpret the results of scientific studies of environmental problems.
5.	Describe threats to global biodiversity, their implications and potential solutions.

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

