Guru Nanak Dev Engineering College, Ludhiana
Department of Information Technology

Program	B.Tech.(CSE)	Semester	3rd
Subject Code	BSCS-101	Subject Title	Mathematics-III
Mid Semester Test (MST) No.	2	Course Coordinator(s)	Prof. Rajbir Kaur, Prof. Sukhminder Singh, Prof. Sachit Mehra
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST	9th Nov., 2023	Roll Number	

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Prove that a Mobius Transformation preserves cross ratio of four points.	CO2, L2	2
Q2	The probability that a pen manufactured by a company will be defective is $\frac{1}{10}$. If 12 such pens are manufactured, evaluate the probability that exactly two will be defective.	CO4, L5	2
Q3	Apply Residue theorem to evaluate $\int_0^{2\pi} \frac{d\theta}{5-3\cos\theta}$.	CO3, L3,L5	4
Q4	A Sample of 100 dry battery cells tested to find the length of life produced the following results: $\bar{x}=12$ hours, $\sigma=3$ hours. Assuming the data to be normally distributed, what percentage of battery cells are expected to have life: (i) more than 15 hours (ii) less than 6 hours (iii) between 10 and 14 hours?	CO4, L2,L5	4
Q5	Two independent samples of sizes 7 and 6 had the following values: Examine whether the samples have been drawn from normal populations having the same variance?	CO6, L4,L5	4
Q6	Verify whether Poisson distribution can be assumed from the data given below:	CO6, L4,L5	8

Probability

Q5 table:

Sample A	28	30	3?	33	31	29	34
Sample B	29	30	30	24	27	28	

Q6 table:

No. of defects	0	1	2	3	4	5
Frequency	6	13	13	8	4	3

Course Outcomes (CO)
Students will be able to

1	Apply the concept of matrices to solve the system of linear equations.
2	Understand the basic functions of complex variables, analytic functions and find the derivative of functions of complex variable.
3	Acquire the basic knowledge, essential to evaluate integration of functions of complex variables.
4	Analyze probability spaces, random variables and different probability distribution.
5	Determine the best fit curve for the given statistical data.
6	Apply statistical methods for analyzing experimental data.

RBT Classification	Lower Order Thinking Levels (LOTS)			Higher Order Thinking Levels (HOTS)		
RBT Level Number	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	3rd
Subject Code		PCCS-102	Subject Title	COMPUTER NETWORKS
Mid Semester Examination (MSE)		2	Course Coordinator(s)	Dr. Amandeep K.Sohal Dr. Daljeet Singh Dr. Inderjit Singh
Max. Marks		24	Time Duration	1 hour 30 minutes
Date of MSE		04/11/2023	Roll Number	22.034.82 (For Student only)

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	What is count-to-infinity problem? In which routing algorithm it exists and gives the solution to it.	CO4,L2	2
Q2	In which situations, TELNET works?	CO6,L4	2
Q3	a) Calculate the number of redundancy bits required for data word i.e. 1010011010 to detect error using hamming code b) Compute the codeword at the sender site using CRC where data word is 1010011010 and the deviser is 10111.	CO3,L3	4
Q4	Briefly, explain the working of ARP operation and draw its packet format.	CO4, L2	4
Q5	Identify the layer in TCP/IP protocol responsible for collision detection? Discuss the working operation of collision detection with flow diagram.	CO3, L4	4
Q6	a)Transport layer provides the two services: connection oriented and connection less services. Name the protocols involved to provide the service. Draw the header format of both the protocols. b)"Either of two parties involved in exchanging data (client or server) can close the connection". Is it true? If yes explain the procedure.	CO5, L4	8

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

1	Explain the concepts of network types, topologies, Bandwidth utilization, OSI and TCP/IP reference models.
2	Apply data rate limit methods and switching techniques for utilization of transmission media
3	Utilize error detection and correction techniques, flow control, error control and multiple access protocols for reliable transmission of frames over network.
4	Make use of functions of network layer i.e. logical addressing, routing and congestion control mechanisms for transmission of packets from source to destination
5	Analyze network design issues, services of transport protocols and connection management for process to process delivery of entire message.
6	Interpret the functions offered by session layer, presentation layer and use of application layer protocols.

RBT Classification	Lower Order Thinking Levels (LOTS)			Higher Order Thinking Levels (HOTS)		
RBT Level Number	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 & Engineering

Program	B.Tech.(CSE)	Semester	3
Subject Code	ESCS-101	Subject Title	Digital Electronics
Mid Semester Exam (MSE) No.	2	Course Coordinator(s)	Dr. Amit Jain, Pf. Meetali
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MSE	7th Sep., 2023	Roll Number	2203482

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Compare Synchronous counters and Asynchronous counters.	CO5, L2	2
Q2	Use a 6 bit R-2R ladder D/A converter having reference voltage of 6.5 volts to obtain the output for 011100. Also, Find its Percentage Resolution.	CO6, L5	2
Q3	Demonstrate a binary to gray code converter and a Gray to binary code converter for 3 bits.	CO3, CO4, L2	4
Q4	Illustrate the concept of priority encoder to generate the circuit diagram.	CO4, L2	4
Q5	The output of a flip flop is toggling between 0 and 1. Identify the digital circuit and discuss its possible states. Also, highlight Race Around Condition.	CO5, L4	4
Q6	Implement the following function using Type 0 and Type 1 of MUX designing. $f(A,B,C,D) = \Sigma m(0, 1, 3, 4, 6, 8, 12, 14, 15)$. Comment on changes occur, if would be designed using Type 2 and Type 3?	CO4, L5	8

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

1	Apply the structure of number systems in digital design.
2	Minimize the Boolean expressions in SOP and POS form using K-maps.
3	Use basic principles of digital logic gates to design digital circuits.
4	Implement combinational logic circuits using Boolean algebra and logic gates.
5	Analyze Synchronous and Asynchronous sequential circuits using Flip Flops, registers and Counters.
6	Apply the knowledge of real-world applications of PLDs in industries.

RBT Classification	Lower Order Thinking Levels (LOTS)			Higher Order Thinking Levels (HOTS)		
RBT Level Number	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:	3rd
Subject Code:	HSMCS-101	Subject Title:	Human Values and Professional Ethics
Mid Semester Test (MST) No.:	2nd	Course Coordinator(s):	Prof. Gurwant Singh Prof. Sukhjeet Singh Dr. Raman Kumar
Max. Marks:	24	Time Duration:	1 hour 30 minutes
Date of MST:	08-11-2023 (Wednesday)	Roll Number:	2203482

Note: Attempt all questions. Elaborate your answer with a neat diagram, wherever required.

Q. No.	Question	COs, RBT level	Marks
Q1.	Name two fundamental human rights recognized internationally.	CO6, L1, L2	2
Q2.	List two steps that engineers can take to deal with ethical issues.	CO5, L2	2
Q3.	Discuss the relationship between freedom of speech and human rights.	CO3, L2, L3	4
Q4.	Describe the ethical considerations in international trade and globalization.	CO6, L3, L4	4
Q5.	Describe the types of inquiries commonly used to analyze ethical dilemmas in engineering.	CO3, CO4, L3, L4	4
Q6.	Compare and contrast the Universal Declaration of Human Rights and the International Covenant on Civil and Political Rights.	CO2, CO6, L4, L5	8

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

1.	Discriminate between valuable and superficial in the life.
2.	Encourages students to discover what they consider valuable.
3.	Understand the value required to be a good human being and apply these values in real life.
4.	Evaluate and modify the behavior.
5.	Understand fundamental and organizational duties and protect individual and social rights.
6.	Know about professional behavior, values and guiding principles.

RBT Classification	Lower Order Thinking Levels (LOTS)			Higher Order Thinking Levels (HOTS)		
RBT Level Number	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 & Engineering

Program	B.Tech.(CSE)	Semester	3
Subject Code	PCCS-101	Subject Title	Object Oriented Programming
Mid Semester Exam (MSE) No.	2	Course Coordinator(s)	Pf. Kamaldeep Kaur Pf. Manpreet Kaur Mand Dr. Hardeep Singh Kang
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MSE	4th Nov, 2023	Roll Number	2203482

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Compare early binding and late binding.	CO4, L2	2

Q2	Consider the following code snippet:
	class A {
	int a;
	public: int b;
	protected: int c;
	};
	class D: protected B
	{int x;
	protected: int y;
	public: int z;
	};
	Classify the visibility of inherited members in derived class.
		CO4, L4	2

Q3	Make use of 'this' pointer in a program highlighting its importance.	CO5, L3	4
Q4	Explain exception handling mechanism along with its detailed syntax.	CO5, L2	4
Q5	Recommend the techniques used to remove ambiguity in inheritance along with suitable example.	CO4, L4	4
Q6	i) Design a program that will create an object 'fob' for writing and associate it with a file named 'data' using constructor method to open the file. Read the contents of the same file using seekg() and tellg() functions. ii) Develop the C++ code for given situation: Design a class 'complex' with data members 'real' and 'imaginary'. Create two objects x and y for the class. Also perform the operation 'x+y' using an operator function.	CO6, CO4, L6	8

Course Outcomes (CO)
Students will be able to

1	Explain the principles of object oriented programming and procedure oriented programming.
2	Design the object-oriented programs using classes and objects to enhance code reusability.
3	Apply the concept of control structures, functions, arrays and strings to develop object- oriented programs.
4	Implement polymorphism and inheritance in object-oriented programming paradigm.
5	Develop programs based on the dynamic memory management and exception handling.
6	Make use of file handling in the development of programs.

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