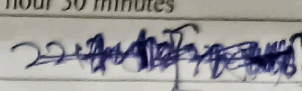


Guru Nanak Dev Engineering College, Ludhiana

Department of Electronics and Communication Engineering

Program	B.Tech.(ECE)	Semester	4
Subject Code	PCEC-107	Subject Title	Object Oriented Programming using C++ and Data Structures
Mid Semester Test (MST) No.	2	Course Coordinator(s)	Harleen Kaur
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST	24 April, 2024	Roll Number	

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Define templates.	CO5, L1	2
Q2	Compare unary and binary operators.	CO5, L4	2
Q3	Discuss the concept of exception handling with neat diagram. Write a program using try block to detect and throw an exception if the condition "divide by zero" occurs.	CO5, L2	4
Q4	Discuss in detail types of data structures.	CO6, L2	4
Q5	List the characteristics of Constructor and destructor. Write a program to demonstrate the concept of parameterized constructor.	CO4, L6	4
Q6	a) Write a program to increment member variables of object. Overload unary ++ operator. b) Convert the following infix expression into its equivalent postfix expression : $(A + B * (C - D)) / E$	CO5, CO6, L5	4+4

Course Outcomes (CO)

Students will be able to

- 1 Demonstrate the basic concepts of object-oriented programming and comprehend Encapsulation.
- 2 Apply the knowledge of C++ to access data through pointers and understand memory allocation.
- 3 Illustrate how to apply the major object-oriented concepts to implement inheritance and polymorphism.
- 4 Identify the need of constructor and destructor to implement features of object oriented programming.
- 5 Understand advanced features of C++ specifically templates, exception handling and operator overloading.
- 6 Explain fundamentals of data structures and distinguish various data structures according to their use and implementation.

Classification	Lower Order Thinking Levels (LOTS)			Higher Order Thinking Levels (HOT)		
	L1	L2	L3	L4	L5	L6
					Evaluating	Creating

Guru Nanak Dev Engineering College, Ludhiana

Department of Information Technology

Program	B.Tech.(ECE)	Semester	4
Subject Code	HSMEC-101	Subject Title	Information Management & Data Analytics
Mid Semester Test (MST)	2	Course Coordinator(s)	Preeti Pannu Simranjit Kaur
No.	24	Time Duration	1 hour 30 minutes
Max. Marks	24	Roll Number	
Date of MST	26-04-2023		

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	List the various domains in which data analysis can be helpful.	CO6, L1	2
Q2	Differentiate between linear SVM and non-linear SVM.	CO5, L4	2
Q3	Demonstrate the constitution of Big data life cycle.	CO4, L2	4
Q4	Discuss the role of Data Analysis in Agriculture sector.	CO6, L1	4
Q5	Classify the various elements of Model Building.	CO4, L4	4
Q6	Evaluate the i) information gain of attributes: A1 and A2 with respect to target: Classification ii) Draw the decision tree for the given dataset	CO5, L6	8

Instance	A1	A2	Classification
1	T	T	+
2	T	T	+
3	T	F	-
4	F	F	+
5	F	T	-
6	F	T	-

Course Outcomes (CO)
Students will be able to

- 1 Create an awareness in upcoming managers, of different types of information systems in an organization
- 2 Analyze the relationship between Management Information Systems (MIS) and functional areas in an organisation
- 3 Assess the relationship between managerial and technical system behavior, including interrelations between components and with other systems
- 4 Apply systems thinking to understand complex business processes (e.g. social, cultural, legislative, environmental, business) to establish new relationships and patterns
- 5 Analyze the correlation between different variables to establish new relationships and patterns
- 6 Solve Business Problems using Data Analytic tools

Guru Nanak Dev Engineering College, Ludhiana
Department of Electronics and Communication Engineering Department

Program	B.Tech.(ECE)	Semester	4
Subject Code	PCEC-109	Subject Title	Linear Control Systems
Mid Semester Test (MST) No.	2	Course Coordinator(s)	Er. Daljit Singh
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST	25 th April, 2024	Roll Number	

Note: Attempt all questions

Q.No.	Question	COs, RBT level	Marks
Q1	Define gain crossover frequency.	CO4, L1	2
Q2	Deduct the break away points from the characteristic equation $s^3 + 2s^2 + 2s + k = 0$	CO3, L5	2
Q3	Summarize the significance of Gain margin and Phase margin in control engineering.	CO4, L2	4
Q4	Build Lag-Lead compensator network and explain.	CO5, L3	4
Q5	For a unity feedback system $G(s) = \frac{100(s+4)}{s(s+0.5)(s+10)}$	CO4, L6	4
Q6	Draw Phase Bode plot. Sketch the root locus for the system having $G(s)H(s) = \frac{k(s+3)}{s(s+1+j)(s+1-j)}$ Comment on the stability.	CO3, L5	8

Course Outcomes (CO)

Students will be able to

1. Classify different types of control system and analyze their use in various practical applications
2. Use different techniques for mathematical modelling of various types of physical systems.
3. Analyze the nature of time response of feedback control systems and find out system stability using Routh-Hurwitz criteria and root locus technique
4. Discuss procedure for determining the stability of a control system based on sinusoidal frequency response
5. Design a stable network meeting desired needs within realistic constraints using concept of feedback compensation
6. Demonstrate the domain knowledge of various control system components such as error detectors, synchro-potentiometers, etc.

RBT Classification	Lower Order Thinking Levels (LO1S)			Higher Order Thinking Levels (HOTS)		
	L1	L2	L3	L4	L5	L6
RBT Level Number	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating
RBT Level Name						

Guru Nanak Dev Engineering College, Ludhiana

Department of Electronics & Communication Engineering

Department of Electronics & Communication Engineering		4 th	Electromagnetic Field Theory
Program	B.Tech.(ECE)	Semester	Chahat Jain
Subject Code	PCEC-108	Subject Title	
Mid Semester Test (MST)	2	Course Coordinator	
No.	24	Time Duration	1 hour 30 minutes
Max. Marks	23 rd April, 2024	Roll Number	XXXXXXXXXX
Date of MST			

Q. No.	Question	COs, RBT level	Marks
Q1	Define phase velocity & group velocity and obtain relation between them.	CO3, L2	2
Q2	Using Maxwell's equations prove that TEM wave cannot exist in a hollow waveguide.	CO4, L3	2
Q3	Define phase velocity & group velocity and hence derive it for TE waves in parallel planes. Compute whether TE ₂ mode propagates or not in parallel conducting plates separated by 5cm for an EM wave travelling at 8GHz.	CO3, L3	4
Q4	Define wave impedance and hence derive it for TE waves in parallel planes.	CO3, L3	4
Q5	A low loss transmission line of 20m characteristic impedance is connected to a load of 600 Ω. Determine the reflection coefficient & VSWR.	CO5, L5	4
Q6	Determine the equations for Transverse Electric wave travelling in a waveguide.	CO6, L5	8

Guru Nanak Dev Engineering College, Ludhiana
Department of Information Technology

Program	B.Tech.(ECE)	Semester	4 (EC-A & B)
Subject Code	PCEC-106	Subject Title	Analog Circuits
Mid Semester Test (MST)	2	Course Coordinator(s)	Dr. Narwant Singh Grewal Prof. KunwarPartap Singh
No.	24	Time Duration	1 hour 30 minutes
Max. Marks		Roll Number	(11:00 AM – 12:30 PM)
Date of MST	22 nd April 2024		

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Define Barkhausen's Criteria for sustained oscillation.	CO4, L1	2
Q2	Determine the oscillation frequency of a transistor Hartley Oscillator with circuit values $L_1=150\mu\text{H}$, $L_2=1.5\text{mH}$, $M=75\mu\text{H}$ and $C=150\text{pF}$.	CO2, L5	2
Q3	Illustrate the impact of negative feedback on amplifier gain, input impedance, output impedance and bandwidth.	CO3, L2	4
Q4	Discuss the working principle of Wein Bridge Oscillator with the help of a proper diagram. Derive the expression for its frequency of Oscillation.	CO2, L3	4
Q5	Explain the working of an integrator with the help of a circuit diagram.	CO3, L5	4
Q6	(a) Explain the block diagram of Op-Amp with all its stages. (b) Construct a Low pass filter using Op-Amp and draw its frequency response.	CO5, L6	5+3

Course Outcomes (CO)
Students will be able to

- 1 Comprehend the operation of amplifiers on the basis of different coupling techniques and feedback topologies.
- 2 Analyze the behavior of different large signal amplifiers and oscillators.
- 3 Interpret the characteristics and performance parameters of operational amplifier and use it for various linear and non-linear applications.
- 4 Design circuits like integrator, differentiator and active filters satisfying desired needs within realistic constraints.
- 5 Describe the working principle of multivibrators and voltage regulators using application specific ICs.
- 6 Engage in self-study to demonstrate applications of electronic circuits.

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