

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	221010100001

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.

REDMI NOTE 11 PRO 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 Panu Simranjit Kaur
No.		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.	C06, L1	2
Q2	Differentiate between linear SVM and non-linear SVM.	C05, 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	F	F	-
4	F	F	+
5	F	T	-
6	F	T	-

Course Outcomes (CO)

Students will be able to

Create an awareness in upcoming managers, of different types of information systems in an organization

Students will be able to

Understand the relationship between Managerial and technological perspectives.

Analyze the relationship between complex system behavior, including interactions between components and with external environment.

Assess the relationship between complex system behavior, including interactions between components and with external environment.

Apply systems thinking to understand complex systems to establish new relationships and patterns

(social, cultural, legislative, environmental, business).

Analyze the correlation between different Analytic Tools.

(Data Mining, Machine Learning, Big Data, etc.).

REDMI NOTE 11 PRO

Guru Nanak Dev Engineering College, Ludhiana

Department of Electronics and Communication Engineering Department

Program	B.Tech.(FCE)	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	CO3, RBT level	Marks
Q1	Define gain crossover frequency.	CO3, 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 $G(s) = \frac{100(s+0.5)(s+10)}{s(s+0.5)(s+1)}$	CO4, L6	4
Q6	Draw Phase Bode plot. Sketch the root locus for the system having $G(s) H(s) = \frac{k(s+3)}{s(s+1+j)(s+1-j)}$	CO3, L5	8
	Comment on the stability.		

Course Outcomes (CO)

Students will be able to

analyze their use in various practical applications

- 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 Root-Horn's S
- 4 Criteria and root locus technique
- 5 Discuss procedure for determining the stability of a control system based on sinusoidal frequency response
- 6 Design a stable network meeting desired needs within realistic constraints using design of feedback compensation
- 7 Concept of feedback compensation
- 8 Demonstrate the domain knowledge of various control system components such as error detectors, amplifiers, potentiometers etc.

RBT Classification Lower Order Thinking Levels (LOTs)

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

Guru Nanak Dev Engineering College, Ludhiana

Department of Electronics & Communication Engineering

4th

Program	Subject Code	Subject Title	Course Coordinator	Electromagnetic Field Theory
Mid Semester Test (MST)	No.	Time Duration	1 hour 30 minutes	Q. No.
Max. Marks	Date of MST	Roll Number	COs, RBT level	Marks
Note: Attempt all questions	Question			
Q. No.	Note: Attempt all questions			
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: (a) Standing wave ratio (b) reflection coefficient. Compute whether TE ₁₀ mode propagates or not in parallel conducting plates separated by 5cm for an EM wave travelling at 8GHz.	CO3, L3	4	
Q4	Define transmission line of 20Ω characteristic impedance & VSWR	CO5, L5	4	
Q5	A low loss transverse Electric wave travelling in a waveguide.	CO6, L5	8	i) Determine the equations for Transverse load of 600 Ω. Determine the equations for Transverse load of 600 Ω.

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. Naryani Singh Grewal Prof. Kunwar/Fartap Singh
No.		Time Duration	1 hour 30 minutes (11:00 AM - 12:30 PM)
Max. Marks	24	Roll Number	<i>2024</i>
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	1
Q2	Determine the oscillation frequency of a transistor Hartley Oscillator with circuit values $L_1=150\mu H$, $L_2=1.5mH$, $M=75\mu H$ and $C=150pF$.	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 Wien 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	L1	L2	L3	L4	L5	L6
Number	Recalling	Understanding	Applying	Analyzing	Evaluating	Creating
RBT Level						
Name						