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.	1	Course Coordinator(s)	Er. Daljit Singh
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST	12ᵗʰ Feb. 2024	Roll Number	5263696 .

Note: Attempt all questions

Q. No.	Question	COs. RBT level	Marks
Q1	Define control system.	CO1. L1	2
Q2	Evaluate the transfer function of Low Pass Filter.	CO2. L5	2
Q3	Explain DC servo motors in detail.	CO6. L2	4
Q4	Summarize the Force-Current analogy.	CO2. L2	4
Q5	A second order system defined by $$\dfrac{25}{s^2 + 5s + 25}$$ is given a step input. Measure the time taken for the output to settle within ±2% of input.	CO3. L5	4
Q6	Formulate the signal flow graph and obtain the overall gain using Mason's gain formula	CO2. L6	8
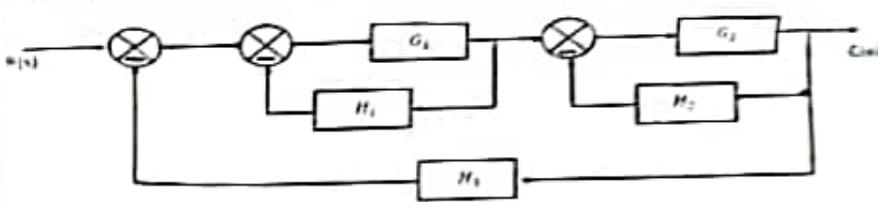
Course Outcomes (CO)
Students will be able to

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, synchros, potentiometers etc.

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 Information Technology

Program	B.Tech.(ECE)	Semester	4 (EC-A & B)
Subject Code	PCEC-106	Subject Title	Analog Cicuits
Mid Semester Test (MST) No.	1	Course Coordinator(s)	Dr. Narwant Singh Grewal Prof. Kunwar Partap Singh
Max. Marks	24	Time Duration	1 hour 30 minutes (11:00 AM – 12:30 PM)
Date of MST	15th February 2024	Roll Number	2203696

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Differentiate between Single Ended and Push Pull Amplifier.	CO1. L1	2
Q2	An R-C coupled amplifier has a voltage gain of 1000, f_1 =50Hz, f_2 = 200kHz and a distortion of 5% without feedback. Find the amplifier voltage gain, f_1', f_2' and distortion when negative feedback is applied with feedback ratio of 0.01.	CO2. L5	2
Q3	Construct circuit diagram of double tuned amplifier and summarize its frequency response.	CO2. L3	4
Q4	Classify the coupling techniques on the basis of parameters such as frequency response etc.	CO1. L2	4
Q5	A class B push-pull power amplifier is supplied with V_{CC} = 50V. The signal swings the collector voltage down to V_{min} = 5V. The total dissipation in both transistors is 40W. Evaluate the total power and conversion efficiency.	CO2. L5	4
Q6	Elaborate the effect of negative feedback on Voltage Gain, Noise, Distortion, Bandwidth, Input Impedance and Output Impedance.	CO1. L6	8

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	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating

Guru Nanak Dev Engineering College, Ludhiana
Department of Information Technology

Program	B.Tech (IT)	Semester	4
Subject Code	HSMEC-101	Subject Title	Information Management & Data Analytics
Mid Semester Test (MST) No.	1	Course Coordinator(s)	Preeti Pannu/Simranjit Kaur
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST	14-03-2024	Roll Number	220496

Note: Attempt all questions.

Q. No.	Question	COs, RBT level	Marks
Q1	Briefly describe the purpose of the Executive Support System	CO1, L1	2
Q2	Categorize the dimensions of Management Information System (MIS)	CO1, L4	2
Q3	Demonstrate the implementation of Decision Support System (DSS) in an organization	CO2, L2	4
Q4	Enumerate the functions of Management Information System(MIS).	CO1, L1	4
Q5	Explain the significance of DMSS in the context of business operations	CO2, L4	4
Q6	Explain the following terms with suitable example: a) M-commerce b) E-governance	CO1, L5	8

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 technological perspectives.
4	Apply systems thinking to understand complex system behaviour, including interactions between components and with other systems (social, cultural, legislative, environmental, business, etc.).
5	Analyze the correlation between different variables to establish new relationships and patterns
6	Solve Business Problems using Data Analytic Tools.

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 Electronic & Communication Engineering

Program	B.Tech (ECE)	Semester	4th
Subject Code	PCEC-108	Subject Title	Electromagnetic Field Theory
Mid Semester Test (MST) No.	1	Course Coordinator	Chahat Jain
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST	13th Feb, 2024	Roll Number	22073616

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Summarise Maxwell's equation in differential form and hence deduce them for static field.	CO1, L2	2
Q2	A vector V is irrotational, evaluate constants a, b and c so that $V=(x+2y+az)a_x + (bx-3y-z)a_y +(4x+cy+2z)a_z$ is irrotational.	CO1, L5	2
Q3	State Stoke's theorem and apply it to derive integral form of Modified Ampere's Circuital law / Maxwell's 4th equation	CO1, L3	4
Q4	State and prove Poynting theorem. Write the SI units of Poynting vector.	CO2, L3	4
Q5	Derive the phasor form of wave equation for a plane wave in a homogeneous lossless dielectric medium. Also, compute the attenuation constant and phase shift constant.	CO2, L5	4
Q6	a) In free space $H=100 \cos(wt-10x) a_z$ A/m. Compute displacement current density 'J_d'. b) Determine the reflection coefficient and transmission coefficient of an electric field wave travelling in air and incident normally on a boundary between air and dielectric having permeability 4 and permittivity 16.	CO2, L5	3+5=8

Course Outcomes (CO)
Students will be able to

1	Apply the Maxwell's equations to solve boundary conditions in different media
2	Demonstrate the concept of electromagnetic wave propagation and its sinusoidal variation in different media
3	Analyze the characteristics of guided waves in parallel planes lines.
4	Explain the propagation of waves in rectangular and circular waveguides
5	Describe and analyze parallel plane transmission lines with Smith charts
6	Use knowledge of waveguides and transmission lines to design communication mediums.

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 Electronics & 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.	1	Course Coordinator(s)	Prof. Harleen Kaur
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST	16-02-24	Roll Number	

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	What are C++ streams?	CO1. L1	2
Q2	Illustrate the role of 'virtual' keyword in C++	CO3. L4	2
Q3	What do you mean by the term data type? Describe briefly the various data types supported by C++ along with their memory requirements.	CO1. L2	4
Q4	What is object oriented programming? Explain any five characteristics of object oriented programming languages in detail with examples	CO2. L1	4
Q5.	Define Pointer. What are the features and uses of Pointer? Write a program in C++ to demonstrate the use of & (address of) and *(value at address) operator.	CO1, L6	4
Q6	a) Construct a class shape which has two overloaded membership functions: Area() and perimeter(). Depending upon whether the dimensions are input as integer or floating point numbers calculate the area and perimeter of three in different shapes. The dimensions of shapes would be entered by the user. b) Discuss how does inheritance promote code reuse? Differentiate between public, private, and protected inheritance.	CO3. L6. L4	8

Outcomes (CO)