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| **Institute / School Name**  | Darbhanga College of Engineering, Darbhanga |
| **Program Name** | B.Tech EEE  |
| **Course Code** | 031712P |
| **Course Name** | Linear Control Theory |
| **Labs (per week)** | 2 | **Course Credits** | **2** |
| **Course Coordinator Name** | Mr.Akhil Mohammed KK |

**LINEAR CONTROL THEORY- LAB**

**Course Outcomes:**

1. **Model** a practical system in transfer function form using its governing laws and apply on software like MATLAB and SIMULINK to study the performance.
2. **Apply** the knowledge of control systems on practical system like AC position servo system.
3. **Analyze** the system response and stability in both time-domain and frequency domain on simple circuit models.
4. **Design** different types of compensators using time-domain and frequency domain specifications

**List of experiments which can be performed in this lab**

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| **S. No.** | **Experiment Detail** |
| 1. | **PREDETERMINATION AND VERIFICATION OF FREQUENCY RESPONSE CHARACTERISTICS OF A LAG NETWORK** |
| 2 | **PREDETERMINATION AND VERIFICATION OF FREQUENCY RESPONSE CHARACTERISTICS OF LEAD NETWORK**  |
| 3 | **STEP RESPONSE AND FREQUENCY RESPONSE OF R-L-C CIRCUIT**  |
| 4 | **PERFORMANCE CHARCTERISTICS OF AN AC POSITION SERVO SYSTEM.** |
| 5 | **STUDY OF MATLAB AND CONTROL SYSTEM TOOL BOX** |
| 6 | **TIME AND FREQUENCY DOMAIN METHODS OF SYSTEM ANALYSIS USING MATLAB**  |
| 7 | **DESIGN OF PHASE LEAD COMPENSATOR IN TIME DOMAIN** |
| 8 | **DESIGN OF PHASE LAG COMPENSATOR IN TIME DOMAIN** |
| 9 | **DESIGN OF PHASE LEAD COMPENSATOR IN FREQUENCY DOMAIN** |
| 10 | **DESIGN OF PHASE LEAD COMPENSATOR IN FREQUENCY DOMAIN** |
| 11 | **FAMILIARIZATION OF SIMULINK** |

**Instructions to the students:**

**Do’s and Don’ts in the lab**

1. Properly connect the kits with power supply terminals.
2. Switch on the power supply after checking connections.
3. Handle the Trainer kits carefully.
4. Always check to see that the power switch is OFF before plugging into the outlet. Also, turn instrument or equipment OFF before unplugging from the outlet.
5. When unplugging a power cord, pull on the plug, not on the cable.
6. When disassembling a circuit, first remove the source of power.
7. Report any damages to equipment, hazards, and potential hazards to the laboratory instructor.

