Date: Time:

Haldia Institute of Technology

Second Class Test-May, 2024

Branch: ECE Batch: All

Year: Second Semester: Fourth

Paper Name: Control System & Instrumentation. Paper Code: EC-402

Full Marks: 25 Time: 50 Minutes

(Answer any two questions from each section)

Section: A

1. For a unity feedback system with open loop transfer function G(S)= 25/S(S+5). Determine the rise time (tr), first peak time (tp) and settling time (ts) 2% error band. [5] [CO:2]
2. Calculate KP, KV and KA for a given G(S)H(S)= 10/(S2+11S+10). Find steady state error of the system for an input r(t)= 5t2u(t). [3+2] [CO:2]
3. What is compensator? Compare between PD and PI controller. [1+4] [CO:3]

Section: B

1. Construct root locus for a unity feedback system with open loop transfer function G(S)H(S) = K(S+1)/(S+2) (S+3) (S+4) [7.5] [CO:2]
2. Check the stability of a unity feedback system with a transfer function

G(S)H(S) = 10(S+2)/(S+1) (S+2) (S+10) using Bode plot. [7.5] [CO:2]

1. What are the advantages and disadvantages of PLC? What is a DCS and how does it differ from PLC? [3+1.5+3] [CO:4]