

GUJARAT UNIVERSITY

BE Semester-VIII (Instrumentation & control) Question Bank

(Non Linear & Digital Control System Design) IC 802

All questions carry equal marks(10 marks)

Q.1	Explain saturation and backlash non linearity with necessary diagram
Q.2	Derive the describing function f or dead zone and saturation non linearity. Then find out describing function for only saturation.
Q.3	Derive the describing function for relay with dead zone.
Q.4	Describe how stability of the non linear system is analyzed using Describing function method.
Q.5	Define precisely different types of stability of nonlinear system. Explain in brief about limit cycle.
Q.6	Explain Variable Gradient method to construct Liapunov's function for non linear system.
Q.7	Explain Relative gain array method used for process control system design.
Q.8	Explain electric oven temperature control.
Q.9	Explain tuning of Proportional (P) controller.
Q.10	Explain dead zone and relay non linearity with necessary diagram
Q.11	Describe stability analysis of the non linear system using Describing function method.
Q.12	Explain tuning of PI+ controller
Q.13	Explain Fuzzy Logic type of Intelligent control.
Q.14	Explain the Cascade control scheme with suitable example
Q.15	Derive the describing function for relay with dead zone and hysteresis.
Q.16	Explain Zeigler – Nicholas method for tuning the controller
Q.17	Derive the describing function f or backlash non linearity
Q.18	Explain in detail Robustness specifications for SISO LTI system
Q.19	Explain the tuning of PID controller.
Q.20	Explain Reheat Furnace temperature control of mill in an integrated still plant
Q.21	Explain performance specifications for SISO LTI system
Q.22	Explain describing function for non-linearity
Q.23	Describe computer aided control of Electrical Power generation plant.
Q.24	Describe the Modifications of PID control schemes
Q.25	Explain Adaptive control scheme in detail with diagram.
Q.26	Explain Automation of Hot strip mill in an integrated steel plant
Q.27	Explain Predictive control system.
Q.28	Explain Two degrees of freedom control.
Q.29	Explain the advantages and nonadvantages of PID controllers in detail.
Q.30	Explain Algorithms for process with dead time and Optimal control.

Q.31	Explain delta and pell's method
Q.32	Explain Computer aided control of Electric Power generation plant,
Q.33	Explain liapunov stability analysis in detail.
Q.34	Give the tuning rules for the PID controller.
Q.35	Explain the stability approach by describing function
Q.36	Electric oven temperature control. Explain it.
Q.37	Explain the difference between Predictive control and Adaptive control
Q.38	Explain Delay in digital control system.
Q.39	Explain the diiferent functions of PID controller and how they are suitable with each other.
Q.40	Explain Statistical Process Control with suitable examples.