T.E - VI | Process Inst^n Systems INST

19.11.15

Q.P. Code : **6269**

(3 Hours) [**Total Marks : 80**

N.B. : (1) Question No. 1 is compulsory.
(2) From Q.No.2 to Q.No.6 solve any three
(3) Assume suitable data wherever necessary.

1. Answer any four : 20
   (a) Explain example of Split Range Control.
   (b) Explain Recipe Model for Batch process.
   (c) Explain Reset windup.
   (d) Derive equation for dead time with first order process.
   (e) Explain Z-N closed loop method for PID Tuning.

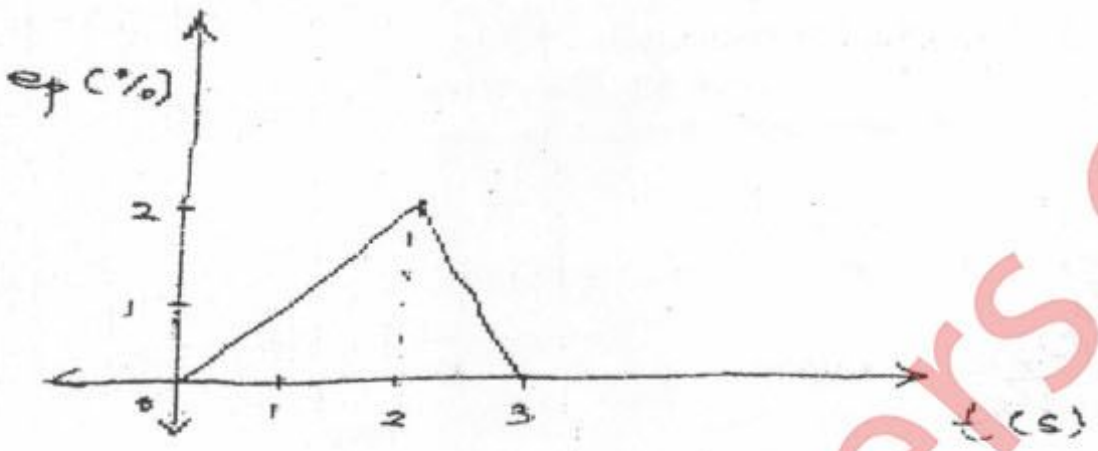
2. (a) Explain RGA Method for multivariable control system. 10
   (b) Explain pneumatic PID controller with neat Diagram. 10

3. (a) Explain Inverse response with an example. 10
   (b) Explain why simple controllers cannot be used with feed forward control system. Prove with equation for controller. 10

4. (a) Explain different ratio control configuration. Give an example for each configurations. 10
   (b) Prove proportional control indroduces offset in a closed loop system. 10

5. (a) Explain terms : 10
      (i) Neutral zone.
      (ii) Proportional Band.
      (iii) Decay Ratio.
      (iv) Degrees of Freedom.
   (b) Develop a Ladder logic for motor with following NO START button, NC STOP button, Thermal overload limit switch opens on high temperature, green light when running, Red light for Thermal overload. 10

6. (a) 10



A PD controller has $K_p = 2.0$, $K_D = 25$ and $P_0 = 40\%$. Plot the controller output for error input in figure above.

(b) Explain MRAC (Model Reference Adaptive Control). 10
