

Code: R7311006

R7

B.Tech III Year I Semester (R07) Supplementary Examinations, May 2013

PROCESS CONTROL INSTRUMENTATION

(Electronics & Instrumentation Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE questions
All questions carry equal marks

- 1 (a) Enumerate the difference between interacting and non-interacting systems with examples.
(b) Explain one process control loop with neat diagram. List all the variables involved in this loop.
- 2 (a) With neat sketch, explain the principle of derivative control action. Summarize its basic characteristics.
(b) Explain in detail, the realization of proportional integral action with the aid of flapper nozzle, bellows etc.
- 3 Explain the working principle of a displacement type pneumatic proportional controller. Discuss the effect of adding the negative feedback.
- 4 (a) Compare the various error terms in obtaining the optimum controller setting.
(b) Explain what is $\frac{1}{4}$ th decay ratio.
- 5 (a) Explain about the damped oscillation method in detail.
(b) Discuss the curve reaction method briefly.
- 6 (a) Explain in detail about the electric actuators.
(b) Explain the operation of PI converter briefly.
- 7 (a) What about the requirements of pressure drop across the valve for better control of flow?
(b) Explain the process of control valve sizing.
- 8 Write short notes on the following:
 - (a) Ratio control.
 - (b) Butterfly valves.
 - (c) Feed forward control
