Code: R7311006

R7

B.Tech III Year I Semester (R07) Supplementary Examinations, May 2012

PROCESS CONTROL INSTRUMENTATION

(Electronics and Instrumentation Engineering)

Time: 3 hours Max Marks: 80

Answer any FIVE questions

All questions carry equal marks

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1 (a) A triangular wier has an equation for flow rate as q= $cv\sqrt{2gh^5}$. Find its resistance.
(b) Write the differential equations of the following liquid level process and hence derive the transfer function of the system as shown in fig (1).

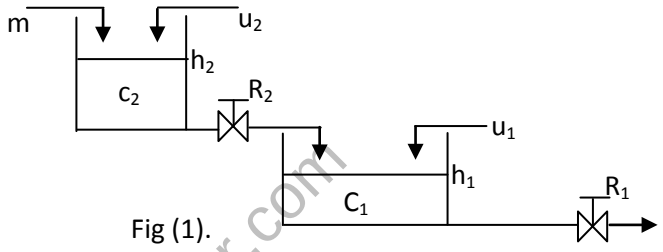

Fig (1).

2 (a) Explain briefly about composite controller modes
(b) A single capacitance process is controlled by P+I controller. Obtain a relationship between dynamics of the process and controller parameters.

3 (a) Explain electronic PID controller.
(b) Compare hydraulic and pneumatic controllers.

4 (a) Explain how optimum controller settings are described for a process using time response.
(b) Write short notes on: (i) IAE (ii) ISE (iii) ITAE.

5 Explain briefly various controller tuning methods.

6 (a) With neat circuit diagram explain I/P converter.
(b) Explain in detail about hydraulic actuators.

7 (a) Distinguish different types of butterfly valves.
(b) Discuss in detail about control valve characteristics.

8 Explain the principles of ratio control with the suitable examples.

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