

Code :R7311306

R7

III B.Tech I Semester(R07) Supplementary Examinations, May 2011

PROCESS CONTROL
(Electronics & Control Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE questions
All questions carry equal marks

- A triangular wire has an equation for flow rate as $q = Cv\sqrt{2gh^5}$. Find its resistance.
 - What are the elements of process control? Explain about process variables.
- A two vessel process shown in figure (1) has $T_1 = T_2 = 60$ sec, $R = \frac{1}{6}$ sec/m² and another design with $T_1 = 30$ sec, $T_2 = 120$ sec, $R = \frac{1}{6}$ sec/m². Which design provides less off set for setting of proportional gain at 10?

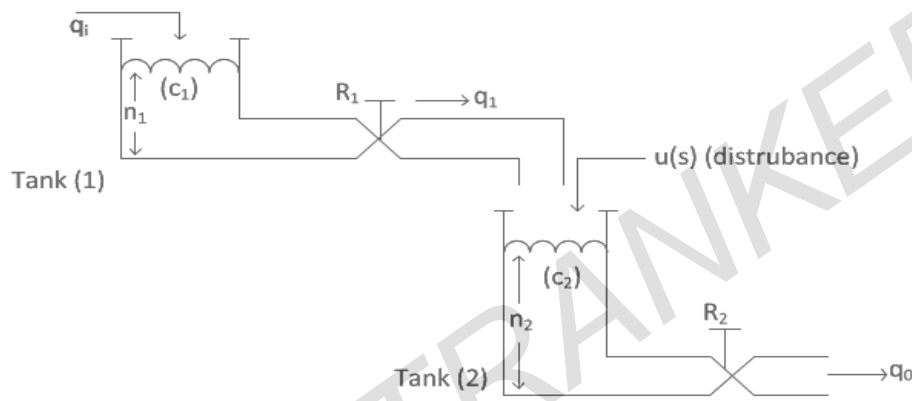


Figure (1)

- Explain Ziegler-Nichols method of controller tuning, and its merits and demerits.
- Discuss the following:
 - Pneumatic transmission.
 - Electric transmission.
 - What are self-operated controllers? Explain.
 - Discuss in detail about Electrical and electronic proportional controllers.
 - Explain about 'ratio control scheme'.
 - Discuss in detail 'Pneumatic actuators'.
 - Explain in detail about various steam plant control systems.
 - Describe the following:
 - Stability of exothermic reactors.
 - Principles governing the conduct of reactions.
 - Discuss 'material balance control'.
 - What is composition feedback? Explain.
