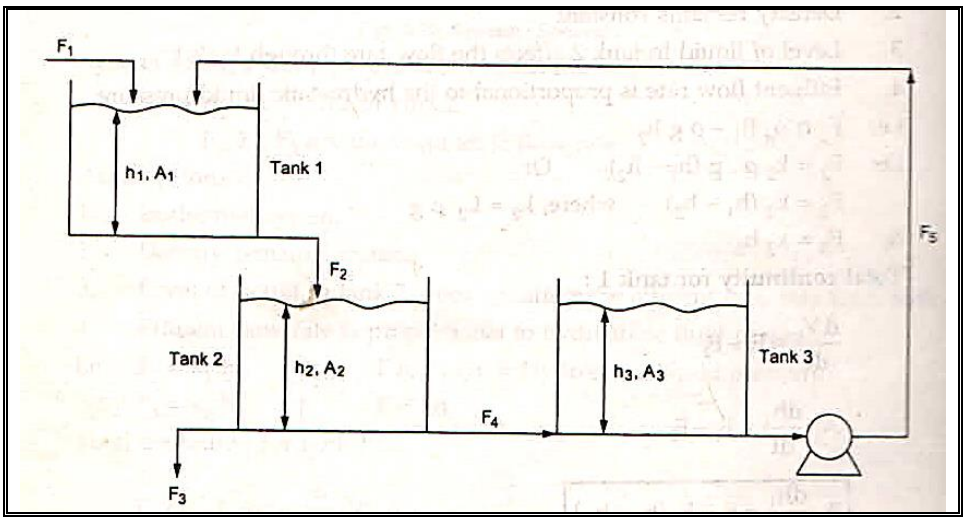
Sardar Beant Singh State University, Gurdaspur
Department of Chemical Engineering & Bio Technology

Tutorial Sheet No.2
Subject: Chemical Process Simulation

Problem1. Consider the following system and develop the mathematical model for the system. What are the state variable for this system and what types of balance equation have you used?



All the flow rate are volumetric and cross sectional area of three tanks are A_1, A_2, A_3 (m^2) respectively. The flow rate F_5 is constant and does not depend upon h_3, while all other effluent flow rates are proportional to the corresponding hydrostatic liquid pressure that causes the flow.

Problem 2 The stirred tank heater system is shown in figure. For tank1, the steam is injected directly in to the liquid water, water vapours are produced in the second tank, A_1 and A_2 are the cross sectional areas of two tanks. Assume that flow rates are proportional to the corresponding hydrostatic liquid pressure that causes the flow. At is heat transfer area for the steam coil. Develop the mathematical model for the stirred tank heater system