COLLEGE OF ENGINEERING & TECHNOLOGY

Department : Electrical & Computer Control Engineering

Lecturer : Dr. Walid A. M. Ghoneim

Course : Microprocessor Based Process Control

Course Code: EE 413 **Time : 2 hours**

Date : 19 / 1 / 2015 **Marks: 40**

Final Exam

Answer all the following questions

(Q1) (20 marks) ILO (A4,5,8,12,15,27,31. B.1,2,3,7,19. C2,3)

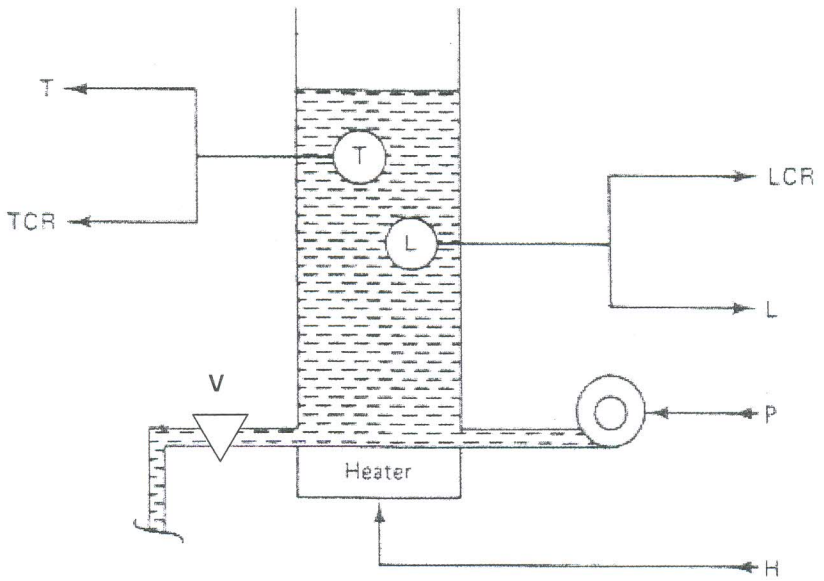
1- In the system shown in figure 1, the measured states are Level (L) , Critical Level (LCR), Temperature (T) & Critical Temp. (TCR). The control outputs are heater (H), Pump (P) and Valve (V).

The system operates in the following sequence:

a) A Push-button starts the process.
b) The pump is on till the level reaches 3 m.
c) The heater is on till the temperature reaches 80 degrees for 120 seconds.
d) Wait till temperature reaches 50 degrees.
e) Open Valve to dispatch.
f) When the level reaches 40 cm, close the valve.

Extreme Cases:

g) If at ANYTIME the Emergency Shut-Down Push button is pushed, then STOP the process (the heater and pump) immediately.
h) If the CRITICAL LEVEL is reached at 3.2 m, then stop the pump and open the valve immediately.
i) If the CRITICAL TEMPERATURE is reached at 100 degrees, then stop the heater and wait for 1 minute.
If the condition remains, then and start the pump and open the valve till the temperature gets lower than 90 degrees.



Members of course Examination Committee:	Signature:	Date:
Lecturer: Dr. Walid Ghoneim		12/1/2015
Course Coordinator : Dr. Ahmed El Shennawy		12/1/2015
Head of Department: Prof. Hamdy Ashour	Hamdy	12/1/2015