Philadelphia University
Faculty of Engineering
Dept. of Computer Engineering

Student Name:
Student Number:

First Exam, Second Semester: 2014/2015

Course Title: Real-Time Computer Control Systems	**Date:** 7/4/2015
Course No: (630512)	**Time Allowed:** 50 minutes
Lecturer: Dr. Mohammed Mahdi	**No. of Pages:** 1

Question 1: ***(12 Marks)***

Objectives: This question is about the basic concepts of RTCCS.

Explain **briefly** the scientific reason for the following: -

1. In Microcontroller based systems the output port should be a latch one.
2. One may use analog multiplexer and PGA in multi-output analog signals process.
3. In RTCCS " the shorter the time-constant of the process, the faster sampling rate is required".
4. In RTCCS one should include the sensor based feature in addition to clock based one.
5. Sequence control scheme is not the same as the Direct Digital Control (DDC) one.
6. Decision Making (DM) elements has many levels in the Hierarchical computer control scheme.
7. It is very useful to include a suitable Man Machine Interface (MMI) facility in RTCCS.
8. The required accuracy of selecting a suitable ADC is governed by many parameters.

Question 2: ***(8 Marks)***

Objectives: This question is about DDC system design.

Given the following system schematic diagram, it is required to sketch a **detailed** I\O microcontroller based system interfacing scheme also **add what is necessary to include**: -

- Alarm facility,
- An analog display for the system variables.

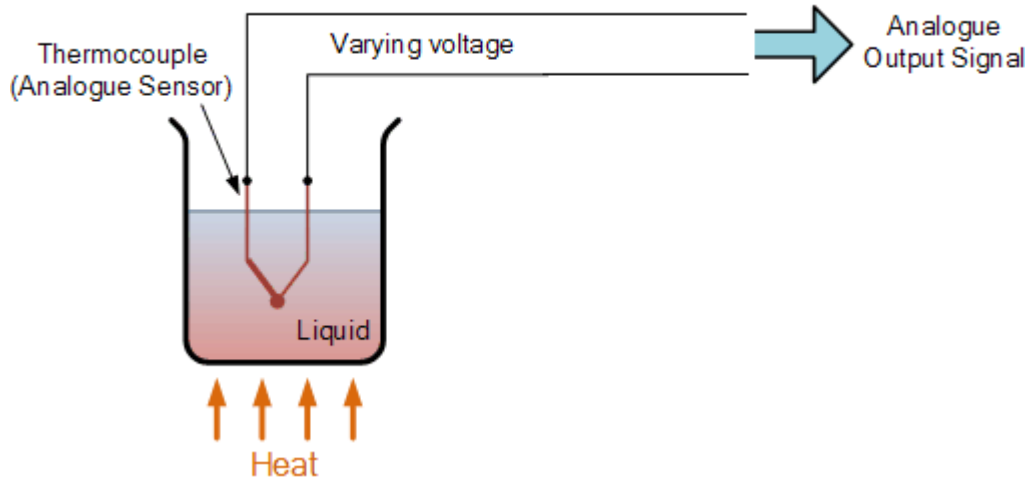

Figure of a simple heating system