



COLLEGE OF ENGINEERING & TECHNOLOGY

Department : Electrical & Control Engineering

Lecturer : Prof. Dr. Hamdy Ashour

Course : Industrial Automated Systems II

Course Code : EE 518

Marks : 40

Date : 13 / 1 / 2016

Time : 2 hour

Final Exam

(Q1) Use clear diagrams and give examples as you can to *discuss how*:-

- Sensors and actuators could be intelligent
- Smart grid could be a part of smart city
- PLC can be utilized as a PID closed loop controller in industrial process
- SCADA system could be distributed
- CNC is a part of CIM
- Different communication hierarchy levels can be utilized within industrial automation system

(15Marks) (A8, B4)

(Q2) The temperature inside an industrial furnace is controlled using *four* different *on/off* operated heating coils based on the error difference between the *analog* required and actual measured signals ranging from 1-10V corresponding to 1-100C, so:-

- If the error is higher than or equal to 50C then *all* heaters are *on*
- If the error is lower than 50C then only *two* heaters are *on*
- If the error is lower than 5C then *all* heaters are *off*
- If the error is *negative* then *flashing alarm* signal is indicated

- Define the SIMATIC-S7 PLC input/output symbols and address
- Write down the suitable S7-300 PLC program

(7 Marks) (A8, A20)

(Q3) Suggest and draw different component required to design and implement a PC-based data acquisition system that is suitable to trip a protective circuit breaker of a 3ph synchronous generator in case of any possible phase failure of such generator.

(6Marks) (A8, A24, B15)

Members of course Examination Committee:		Signature:	Date:
Lecturer:	Prof. Dr. Hamdy Ashour		13/1/2016
Course Coordinator :	Dr. Ahmed El-Shenawi		13/1/2016
Head of Department:	Prof. Dr. Hamdy Ashour		13/1/2016

