SUBJECT CODE:- 342
FACULTY OF ENGINEERING AND TECHNOLOGY
B.E.(EEP/EEE/EE) Examination Nov/Dec 2015
Industrial Automation
(Revised)

[Time: Three Hours]   **[Max. Marks: 80]**

"Please check whether you have got the right question paper."
N.B i) Q.No.1 and Q.No.6 from are compulsory.
    ii) Solve any two questions from remaining questions in section A&B
    iii) Figures to the right indicate full marks
    iv) Assume suitable data, if necessary.

Section- A

Q.1   Solve <u>any five</u>   10
    i.   What is industrial automation? Give one example
    ii.   How are the actuators categorized?
    iii.   What are the low energy output signals of controllers used in electrical and Pneumatic system? Write their range
    iv.   Compare discrete and continuous process control
    v.   Draw ladder diagram using two inputs and outputs. Mention input & output
    vi.   Compare Rs 232 & Rs 485 signal transmission
    vii.   What is the role of controller in automation?
    viii.   What are the types of automation used for different operations?

Q.2 a) How supervisory or digital control is applied to control the temperature in any heat treatment process? Draw and explain its control system   08

    b) Why digital control, Supervisory control is required? how it is achieved? What are their features, merits and demerits?   07

Q.3 a) What is factory automation? Give the example.   07

    b) How to automate one process operation and multiple process operation? Draw and explain automated system   08

Q.4 a) How level of automation is described as manually operated, Semi-automatic & fully automatic? Explain   08

    b) Draw and explain Modbus Protocol   07

Q.5 a) Draw and explain functional programmable logic controller   08

    b) How analog PLC operation is implemented? how processing is done? Explain   07

Section-B

Q.6   Solve <u>any five</u>   10
    i.   Define SCADA. What are its advantages?
    ii.   What factors makes SCADA different from other control & monitoring systems?
    iii.   What are the standard communication protocols used in SCADA System?
    iv.   List the data variables acquired from different substation using SCADA System in Substation Control?
    v.   What are the alarm functions arranged through SCADA system in substation control?
    vi.   What is DCS? What are its advantages?
    vii.   How displays are categorized in DCS?
    viii.   What are the field buses in DCS

Q.7 a) Draw and explain basic SCADA system architecture   08

b) How analog and discrete control is obtained using Remote Terminal Unit (RTU) in the field? Explain   07

Q.8 a) How communication is achieved I transmission and distribution using SCADA? Draw hardware diagram   08

    b) Draw and explain SCADA Configuration for any convectional Power generation   07

Q.9 a) Draw and explain input /output hardware system in DCS   08

    b) How multiplexing and remote sensing is achieved in DCS? Explain   07

Q.10   Write short notes on <u>any three</u> questions   15
   a. Difference between DCS and traditional control system
   b. Various ways of communication technologies.
   c. Data logger
   d. Automatic Substation Control