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EIGHTTH SEMESTER   B.Tech.(EE/EL)

MID SEMESTER EXAMINATION   March 2019

EE/EL-440 SCADA & ENERGY MANAGEMENT SYSTEMS

Time: 1.5 Hours   Maximum Marks: 25

Note: Answer all questions. Assume suitable missing data if any.

1. (a) What are various types of controllers? Explain PI controller. Why it is known as reset Controller? Derive its transfer function also.   (3)

   (b) A PI controller has $K_c = 4.5$ and $\tau_c = \frac{1}{7}$ s. Find the controller output for an error given by $\varepsilon = 3 \sin \pi t$. What is the phase shift between error and controller output?   (4)

2. (a) Explain the characteristics of various control actions.

                                                                                (4)

   (b) Select the feedback controller for the following processes and justify your answer:

   (i) Composition Control (ii) Flow Control   (2)

3. (a) What do you mean by SCADA? Explain its 3 applications.

                                                                                (4)

   (b) Draw a figure showing all elements of a SCADA system.

                                                                                (2)

4. Explain the elements of SCADA system referring above figure. Draw a figure showing an RTU and its various connections also.   (6)

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