CC25

M.Tech. EXAMINATION, May 2019

(Third Semester)

(B. Scheme) (Re-appear)

EE(I&C)

MIC615B

SCADA AND POWER SYSTEM

AUTOMATION

Time : 3 *Hours*]   [*Maximum Marks :* 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. Draw architecture of SCADA and also explain the fucntions of SCADA in power system.

15

2. Explain the following term RTU, PLC and MTU with their applications. **15**

Unit II

3. How does SCADA help in generation distribution, planning and operation of power system ? **15**

4. What are different types of communication techniques ? Compare radio frequency communication with power line carries communication. **15**

Unit III

5. What do you mean by energy management system ? Discuss its various hierarchical levels.

15

Unit IV

6. What do you understand by state estimation ? A system is described by the following equation :

$Z_1 = (5/8)X_1 - (1/8)X_2, Z_2 = -(1/8)X_1 + (5/8)X_2;$
$Z_3 = (3/8)X_1 + (1/8)X_2, Z_4 = (1/8)X_1 + (3/8)X_2$

Estimate X_1 and X_2 against four measurements, $Z_1 = 9.01$, $Z_2 = 3.02$, $Z_3 = 6.98$ and $Z_4 = 5.01$ using least square method. Take the weights 100, 100, 50 and 50 for respective measurements. **15**

Unit IV

7. (a) How can you design a substation layout ? Explain in detail. **7½**

(b) Explain in detail, the customer level intelligent automation system. **7½**

8. Write short notes on the following :

(a) Automatic tracking and facility inventory system. **7½**

(b) Equipment maintenance and trouble call management. **7½**