

7. Write a detailed note on power substation automation and equipment condition monitoring system. 20

**SECTION – D**

8. Write notes on :
- (a) Substation & feeder level automation. 10
  - (b) Automatic mapping and facility management. 10
9. Write notes on :
- (a) Power system & equipment maintenance. 10
  - (b) Trouble call management. 10

Roll No. ....

**24438**

**B. Tech. 7th Semester (EEE)  
Examination – December, 2016**

**PLCS & SCADA**

Paper : EE-407-F

Time : Three Hours ] [ Maximum Marks : 100

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

**Note :** Attempt *five* questions in all, selecting *one* question from each Section. Question No. 1 is *compulsory*.

1. (a) State and explain advantages and disadvantages of PLC in brief.
- (b) Explain SCADA communication in an electrical power system.
- (c) Write a short note on energy management system.

- (d) Write a short note on automatic facility management.  $5 \times 4 = 20$
- (e) Define and explain : HMI, SCADA server, Ladder logic. 10

### SECTION – A

2. (a) Explain central processing unit in detail along with the three important parts in it. 10
- (b) Write a PLC program to implement the conditional logic statements below : 10
- (i) A PLC output is to switch on if any of three input is switched on.
- (ii) A PLC output is to switch on if any of three input is switched on but not two or more.
- (iii) A PLC output is to switch on if any two output is switched on, but not the third.
3. (a) List various functions of SCADA in electrical operations industry. 10

### SECTION – B

4. (a) How SCADA system is used in power generating station control room ? Explain with an example. 10
- (b) Discuss the role of SCADA system in a power grid. 10
5. Explain the role of national control centre and regional control centre in a modern power system. Use diagrams to depict the communication between these two. Discuss the use of automatic generation control with a SCADA system in a power system facility. 20

### SECTION – C

6. (a) Discuss the advantages of inter utility economy energy evaluation. 10
- (b) Write a detailed note on security analysis of power systems. 10