

M. TECH.-II (ELECTRICAL -POWER SYSTEM) (CBCS – 2015

COURSE) : WINTER - 2017

SYUBJECT: PLC and SCADA

Day: Wednesday

Date: 29/11/2017

Time: 11.00 AM TO 02.00 PM

Max Marks: 60

W-2017-2822

N.B:

- 1) All questions are **COMPULSORY**.
- 2) Answer to **TWO** sections should be written in **SEPARATE** answer book.
- 3) Neat diagrams must be drawn **WHEREVER** necessary.
- 4) Figures to the right indicate **FULL** marks.
- 5) Assume suitable data, if necessary.

SECTION-I

- Q.1 a) Define PLC and explain its importance in automation. (06)  
b) Explain history of PLC in detail. (04)

OR

- a) State various PLC applications. (05)  
b) Write a short note on input module. (05)

- Q.2 a) Explain steps involved in ladder diagram construction. (05)  
a) Draw ladder diagram to verify truth table for NAND gate. (05)

OR

- a) Explain rules to construct ladder diagram. (05)  
b) Draw ladder diagram for following function table (05)

I <sub>1</sub>	I <sub>2</sub>	Q <sub>1</sub>	Q <sub>2</sub>	Q <sub>3</sub>	Q <sub>4</sub>
0	0	1	1	1	1
0	1	0	0	0	0
1	0	0	0	0	0
1	1	1	1	1	1

- Q.3 a) Explain AC motor starter. (05)  
b) Explain Induction motor drive. (05)

OR

- a) Explain DC motor speed control method. (05)  
b) Draw and explain PID control using PLC. (05)

SECTION-II

- Q.4 a) Define SCADA. (04)  
b) State applications of SCADA explain any one. (06)

OR

- a) Explain merits & demerits of SCADA. (05)  
b) Write a note on HMI. (05)

- Q.5 a) Explain different generations of SCADA architecture. (05)  
b) Write a note on Energy management system. (05)

OR

- a) Explain use of SCADA in petroleum refining process. (05)  
b) Explain use of SCADA in water purification system. (05)

- Q.6 a) What are open systems Interconnection protocols? (05)  
b) Explain control net protocols. (05)

OR

- a) Explain DNP3 protocol. (05)  
b) What is CIP protocol? (05)