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Total Number of Pages : 01

B.Tech  
PEL8J002

8<sup>th</sup> Semester Regular Examination 2018-19

PLC & SCADA

BRANCH : EEE

Max Marks : 100

Time : 3 Hours

Q.CODE : F033

Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.

The figures in the right hand margin indicate marks.

**Part- I**

- Q1 Only Short Answer Type Questions (Answer All-10) (2 x 10)**
- a) What are the types of I/Os used in PLC system?
  - b) What is Analog out put module in PLC.
  - c) List out any two applications of SCADA systems.
  - d) Explain in brief about fixed and modular PLCs.
  - e) What is typical scan time in PLCs? What affects scan time?
  - f) Mention the features of the SCADA software.
  - g) What are the different selection criteria for PLC?
  - h) What is the fastest method of communicating with the plant floor in SCADA system?
  - i) What are the basic functions of computer aided process control system?
  - j) What is CIMPLICITY?

**Part- II**

- Q2 Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) (6 x 8)**
- a) Explain with neat diagram for speed control of DC motor with DC source.
  - b) Explain Output ON/OFF and analog devices in detail.
  - c) Explain the rules for constructing the ladder diagram.
  - d) Draw and explain the main block diagram of PLC.
  - e) State and explain advantages and disadvantages of PLC in detail.
  - f) What are Open Systems Interconnection protocols?
  - g) Explain up counter in details with its related bits and timing diagram.
  - h) With the help of response curves, explain the effect of output of the system with changes in Kp.
  - i) Explain the SCADA systems in interconnected power system.
  - j) Write short note on DNP3 protocol.
  - k) Design traffic light controller using PLC ladder diagram.
  - l) Explain in brief about MCR (master control relay) and control zones.

**Part-III**

- Q3 Only Long Answer Type Questions (Answer Any Two out of Four) (16)**
- Draw and explain in details about SCADA architecture and give its applications
- Q4 (16)** Give different benefits of automation system and explain about different types of PLC
- Q5 (16)** Explain IEC61850 layered architecture and explain in brief about control & Information Protocol (CIP)
- Q6 (16)** What is Automatic Generation Control (AGC) and how it is achieved, explain the objectives of the system.