Exam. Code: 0936
Sub. Code: 33769

2015

B.E. (Electrical and Electronics Engineering)

Sixth Semester

PE-EE-603: Programmable Logic Controllers

Time allowed: 3 Hours Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.

x-x-x

I. Answer the following:-

a) Define a Programmable Logic Controller (PLC).

b) State two advantages of using PLCs in automation.

c) What are the main components of a PLC system?

d) Explain the role of the CPU in a PLC.

e) What is meant by I/O modules in PLC systems?

f) Differentiate between NO and NC contacts in ladder programming.

g) What is Boolean algebra's role in PLC programming?

h) List two criteria for selecting a PLC for an application.

i) Define solid-state memory in the context of PLCs.

j) Mention one application of analog input devices in PLC systems. (10x1)

UNIT - I

II. Describe the evolution of PLCs, highlighting their advantages and disadvantages compared to traditional relay-based systems. (10)

III. Explain the hardware components of a PLC in detail. Discuss how input and output devices are connected to the PLC system. (10)

IV. Construct a ladder diagram for controlling a motor using a start and stop push button. Explain the logic involved in the design. (10)

UNIT - II

V. Discuss the process of converting relay schematics into PLC ladder diagrams with an example. Highlight the significance of this conversion. (10)

VI. Explain the steps involved in selecting a PLC for an industrial application. Discuss how analog I/O devices influence the selection criteria. (10)

VII. Design a PLC program to implement a simple traffic light control system for a single intersection. Explain the logic and show the corresponding ladder diagram. (10)

x-x-x