Exam.Code:0936
Sub. Code: 33774

2056

B.E. (Electrical and Electronics Engineering)

Sixth Semester

EE-611: Programmable Logic Controller and Distributed Control System

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 Continuous Process Control.

b) What is SCADA?

c) Name any two PLC programming languages.

d) What is meant by latching in PLC?

e) State one advantage of PLC over relay logic.

f) What is the function of a digital input module?

g) Define DDC.

h) What is Boolean algebra used for in PLC programming?

i) Name any one switching device used with PLC.

j) What is the topmost level in DCS hierarchy? (10x1)

UNIT - I

II. a) Describe PLC architecture with the help of its functional block diagram.

b) Why is isolation required while connecting input or output devices to the PLC? Explain with suitable diagram how I/O devices can be isolated from PLC. (2x5)

III. a) List different types of PLC programming languages. Develop ladder diagrams for NAND, NOR and Exclusive OR gates.

b) What is scanning in PLC? Draw and explain the scan cycle. (2x5)

IV. a) Explain Continuous Process Control and Discrete-state Process Control with suitable examples.

b) Discuss the scope of automation in modern industries. (2x5)

P.T.O.

UNIT - II

V. a) Explain network topology of DCS.

b) Describe the functions of each level of DCS. (2x5)

VI. Write PLC ladder logic/programs for any two of the following applications:

a) Temperature control system

b) Bottling plant

c) Level control system (10)

VII. a) Draw the ladder diagram for a motor control in forward and reverse directions. Explain the logic in each rung.

b) A temperature control system consists of four thermostats. The system operates three heating units. Thermostats are set at 55,60,65 and 70 degrees C. Below 55 degrees C, three heaters are to be ON. A temperature between 55 and 60 degrees C causes two heaters to be On. For 60 to 65 degrees, one heater is to be ON. Above 70 degrees C, there is a safety shutoff for all three heaters in case one stays on by mistake. A master switch turns the system On and Off. Construct a PLC system. (2x5)

x-x-x