

Code: R7420205

R7**B.Tech IV Year II Semester (R07) Advanced Supplementary Examinations June 2012****PROGRAMMABLE LOGIC CONTROLLERS**

(Electrical and Electronics Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE questions

All questions carry equal marks

- 1 (a) Draw the block diagram of PLC system and explain the function of each block.
(b) What are the PLC programming formats limitations that must be observed when programming a PLC ladder diagram.
- 2 A temperature control system consists of four thermostats. The system operates three heating units. Thermostats are set at 55, 60, 65 and 70^o F. Below 55^o F, there heaters are to be on. A temperature between 55 and 60^o F causes two heaters to be on. For 60 and 65^o F, one heater is to be on. Above 70^o F, there is a safety shunt off for all the three heaters in case one stays on by mistake. A master switch turns the system on and off construct the PLC ladder diagram.
- 3 For the spray-painting parts system, develop the flow chart and ladder logic diagram.
- 4 Describe the following:
 - (a) Module addressing.
 - (b) Output registers.
- 5 (a) Discuss the different types of formats of PLC timers.
(b) Write PLC program for the following application:
When a start button is depressed, M goes on, five seconds later, N goes on. When stop is pushed, both M and N go off. In addition, 6 seconds after M and N go off, fan F, which had previously been off goes on. F remains on until the start button is again depressed, at which time it goes off.
- 6 Explain the following with suitable examples:
 - (a) Jump with return.
 - (b) Move with timing example.
 - (c) FIFO function.
 - (d) SKIP function.
- 7 Write PLC program for the following application. Controlling the basic pick and place two-axis Robot using drum controller/sequencer.
- 8 Explain any two of the following:
 - (a) Multi bit data processing.
 - (b) Analog signal processing.
 - (c) Position indicator with PID control.
