Code: 13A02606 **R13**

B.Tech III Year II Semester (R13) Regular & Supplementary Examinations May/June 2017

PROGRAMMABLE LOGIC CONTROLLER & ITS APPLICATIONS

(Electrical and Electronics Engineering)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

(a) List the different components in PLC.
(b) Write the advantage of PLC than hard wired relay.
(c) Write the logic functions of “AND” and “OR” gate.
(d) In which logic gate the output will be a LOW for any case when one or more inputs are zero?
(e) State the purpose of shift registers.
(f) Name different types of timers used in PLC.
(g) What are the features of PLC as a controller?
(h) List down the general application of PLC for control.
(i) List the types of PLC analog modules.
(j) List the PID functions.

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 (a) Discuss about architecture of a PLC.
(b) Write the advantages and disadvantages of PLC.

OR

3 (a) Draw the schematic of input modules of PLC.
(b) Discuss about the programming formats of PLC.

UNIT – II

4 When a large motor is started, a lubrication pump for the bearings of the large motor is also started. When the large motor is switched off, it is desired that lubrication pump should continue to run for 40 seconds more. Draw a ladder Diagram to implement this scheme.

OR

5 Construct a schematic PLC ladder diagram for a pump motor which requires two separate Start-Stop-Jog control stations.

UNIT – III

6 (a) Explain different types of PLC arithmetic functions.
(b) Explain the use of SUBTRACT function for conveyor count application with neat schematic.

OR

7 (a) Explain the characteristics of PLC registers.
(b) Explain the following: (i) Input registers (single and group). (ii) Output registers.

UNIT – IV

8 (a) Explain how JUMP differs from SKIP and MCR functions.
(b) Explain the operation of PLC table and register MOVE. What is its significance when compared to other MOVE operations?

OR

9 (a) Explain PLC sequencer function. Give an example for its application in industry.
(b) Explain operation of industrial three axis robot control.

UNIT – V

10 Write short notes on:

(a) ONS and CLR functions.
(b) PLC analog modules.
(c) PID modules.

OR

11 What is PID control? How is it programmed in PLC? Give an example of programming PID control using PLC in industry.

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