

B.Tech III Year II Semester (R15) Supplementary Examinations December/January 2018/2019

**PROGRAMMABLE LOGIC CONTROLLER & ITS APPLICATIONS**

(Electrical &amp; 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 out output analog devices.
  - (b) List out few limitations of PLC.
  - (c) Write 4-input PLC equivalent of NOR gate.
  - (d) Write Boolean algebra equivalent for any 4 digital gates.
  - (e) Write about coil format of PLC multiply function.
  - (f) Write a basic PLC counter operation.
  - (g) Describe the PLC's jump function.
  - (h) Describe the PLC's sweep function.
  - (i) Write a block diagram of a typical PID controller.
  - (j) Explain about analog ADD function in PLC.

**PART – B**

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

**UNIT – I**

- 2 Explain the constructional details of PLC system.

**OR**

- 3 Explain PLC input instructions with suitable examples.

**UNIT – II**

- 4 Write some of the common practices for format of control ladder diagram in detail.

**OR**

- 5 Write ladder relay and PLC control diagrams for "Output '7' to be on, input '6' must be off and either input '8' or input '9' must be on, in addition one of inputs 1, 2 or 3 must be on".

**UNIT – III**

- 6 Write step by step procedure and PLC ladder diagram for "A process where a rate is determined by dividing a count by a time interval".

**OR**

- 7 Write about PLC basic arithmetic functions in detail.

**UNIT – IV**

- 8 Explain the PLC move function with suitable applications.

**OR**

- 9 Explain the PLC master control relay function with suitable applications.

**UNIT – V**

- 10 Explain about PLC analog signal processing with suitable examples.

**OR**

- 11 Explain how maintenance and preventive maintenance of PLC is performed.

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