



PAR-003-027903

Seat No. _____

M. Sc. (ECI) (Sem. IX) (CBCS) Examination

October / November - 2018

Basic Programmable Controllers : Paper - 35

(New Syllabus)

Faculty Code : 003

Subject Code : 027903

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

- Instructions :** (1) All questions carry equal marks.
(2) Figures on right hand side indicate marks.

1 Answer the following : (Any Seven) 14

(1) What is sealing contact? Draw its PLC ladder diagram.

(2) Draw the ladder diagram of following instruction list :

LD X0

ANI X1

OUT Y1

(3) Write instruction list for *AND – OR – AND* gate and draw its ladder diagram.

(4) Draw a PLC ladder diagram for following Boolean expression: $Y_0 = (X_1)(X_2) + (X_0)(X_3)$.

(5) Write full form of the following prefixes used as reference designators : *LS, SS, CB, F*.

(6) Explain following machine control terminology – *RUN, CYCLE*.

(7) What is retentive and non-retentive timer?

(8) Draw block diagram of Programmable Controller.

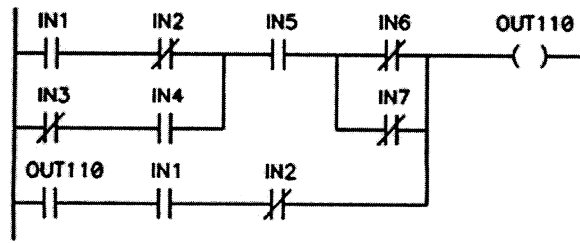
- (9) Draw symbol of Limit Switch and Momentary Push Button Switch.
- (10) Draw the ladder logic rung for a normally open IN_1 NAND'ed with a normally closed IN_2 driving a coil CR_1 .

2 Answer the following : (Any Two)

- (1) Draw and explain Incremental Encoder. 7
- (2) Draw and explain input wiring for PLC with common inputs and isolated inputs. 7
- (3) Write a short note on Inductive Proximity Sensors. 7

3 Answer the following :

- (1) Write the mnemonic code for the ladder diagram shown below. 5



- (2) Draw ladder diagram of JK and D Flip Flop. 5
- (3) Draw and explain Turbine Flow Sensor. 4

OR

3 Answer the following :

- (1) Write a short note on DC Motor Control with DC Power Source. 7
- (2) Explain integral function for closed loop control system. 7

4 Answer the following :

- (1) Explain in brief typical system components for a modularized PLC. 7
- (2) Explain working of automatic one shot and externally triggered one shot with its ladder diagram. 7

5 Answer the following : (Any **Two**)

- (1) What is Strain Gauge? Explain its construction and working in detail. **7**
 - (2) Explain the problems associated with simple closed-loop systems with only proportional gain, K_p . **7**
 - (3) Write a short note on Counters. **7**
 - (4) What are Time Delay Relays (TDRs)? Explain different types of TDRs along with their timing diagram. **7**
-