

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VIII(NEW) EXAMINATION – SUMMER 2019****Subject Code:2182408****Date:09/05/2019****Subject Name:Programmable Logic Controller For Power Electronics****Time:10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) What is necessity of input/output modules ? Classify i/o modules. **03**
(b) List out advantages of PLC over relay based logic. **04**
(c) Explain discrete input module with diagram. **07**
- Q.2** (a) Implement ladder diagram for $F(a,b,c) = \sum (0,2,4,6)$ **03**
(b) Implement ladder diagram for 4:1 Multiplexer. **04**
(c) Explain PLC memory in detail. **07**
- OR**
- (c) List out the rules to construct PLC ladder diagram. **07**
- Q.3** (a) Express the following function into ladder diagram. **03**
 $F=a'b'c+bc+b'c'+ac$
(b) Explain Latch and Unlatch instruction with suitable example. **04**
(c) List various timer instructions of PLC and explain any one with timing diagram. **07**
- OR**
- Q.3** (a) List various analog input and output devices which can be interface with PLC. **03**
(b) List the trigonometric function possible with PLC. Explain one with suitable example **04**
(c) Explain CTU (Up Counter) function with suitable example. **07**
- Q.4** (a) Explain PLC move instruction. **03**
(b) Explain JUMP function in PLC with application **04**
(c) Explain any two data comparison instruction with block format and example. **07**
- OR**
- Q.4** (a) Explain PLC FIFO function. **03**
(b) What is the importance of MCR function in PLC. **04**
(c) Explain any two data arithmetic instruction with block format and example. **07**
- Q.5** (a) List out different PLC programming languages. **03**
(b) Explain any application of Shift Register function in PLC. **04**
(c) Explain PLC sequencer function with its example **07**
- OR**
- Q.5** (a) Explain PLC AND matrix function. **03**
(b) Explain holding register of PLC. **04**
(c) Explain any application of PLC in power electronics. **07**
