

# CBCS SCHEME

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15EE562

## Fifth Semester B.E. Degree Examination, Dec.2018/Jan.2019 Programmable Logic Controllers

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

### Module-1

- 1 a. Write a short note on Human Machine Interfaces (HMI). (06 Marks)  
b. Discuss processor memory organization of programmable logic controllers. (10 Marks)

OR

- 2 a. With a neat diagram explain typical parts of a PLC. (08 Marks)  
b. With appropriate diagram show how addressing is achieved for an Allen-Bradley SLC – 500 controller. (08 Marks)

### Module-2

- 3 a. With an example of controlling a electric motor explain the concept of SEAL-IN circuit. (06 Marks)  
b. What do you mean by 'Electrical Interlocking Circuits'. Draw sequential hardwired three motor relay control circuit and its equivalent ladders diagram. (10 Marks)

OR

- 4 a. Draw a PLC program for fluid pumping process. Comment on each rung. (08 Marks)  
b. Explain cascading and reciprocating timers with an example for each. (08 Marks)

### Module-3

- 5 a. Draw a PLC program for 24 hour clock, explain in brief. (08 Marks)  
b. Draw and explain a PLC program for "Motor Lockout Program". (08 Marks)

OR

- 6 a. Explain the process of forcing external I/O addresses. (08 Marks)  
b. Underline the problems occurs due to subroutine program execution. Also discuss the remedy. (08 Marks)

### Module-4

- 7 a. Draw and explain how file to file copy function is used in FAL instruction. (08 Marks)  
b. Draw the block format of SUB-instruction also draw ladder diagram for 'vessel overflow alarm program'. (08 Marks)

OR

- 8 a. Draw the ladder diagram for the MUL instruction used as a part of a 'temperature control program'. (08 Marks)  
b. Draw and explain 'set -point control program'. (08 Marks)

### Module-5

- 9 a. Explain sequencer program for time driven sequencer output. (08 Marks)  
b. Using BSL instruction draw the ladder diagram for "spray painting application". (08 Marks)

OR

- 10 a. Explain SCADA in conjunction with PLC. (08 Marks)  
b. Write a short note on : i) Token passing ii) Polling. (08 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.