

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY GURAJADA VIZIANAGARAM
IV B. Tech I Semester Advanced Supplementary Examinations March 2025
PROGRAMMABLE LOGIC CONTROLLERS AND APPLICATIONS

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**

All Questions Carry Equal Marks

UNIT-I

1. a) Describe the components of a PLC? [7M]
b) What are the functions of PLC CPU? Explain their operational sequence. [7M]

(OR)

2. a) Explain the construction of PLC ladder diagrams. [7M]
b) Draw and explain the necessary ladder diagram for spray process control. [7M]

UNIT-II

3. Design the operation of a drill press module and draw the necessary Ladder diagram? [14M]

(OR)

4. What are the characteristics of PLC registers? Explain the function of any two types of PLC registers in detail. [14M]

UNIT-III

5. a) How many configurations are there for PLC counter functions? Explain. [7M]
b) Discuss the application of a dual counter for parts to be counted on a conveyor belt. Assume required design considerations. [7M]

(OR)

6. a) What is PLC timer, what are the different types of Timers? [7M]
b) Explain any one of PLC Timer function Industrial application with neat sketch. [7M]

UNIT-IV

7. a) Define Data Handling function, explain two (SKIP and Master control Relay) Data Handling functions with an example. [7M]
b) How JUMP differs from SKIP and MCR functions? Explain. [7M]

(OR)

8. a) Describe the JUMP with NON-RETURN with an application. [7M]
b) Explain operation of Industrial three axis robot control. [7M]

UNIT-V

9. a) How do you change the status of bit pattern of a register? Explain. [7M]
b) Write and explain representation of Analog input signals of PLC. [7M]

(OR)

10. a) Write short notes on the following: a) Input output devices connected to PLC b) PLC analog signal processing? [7M]
b) Explain the importance of PID functions used in Analog PLC operations. [7M]
