# **Question Paper**

Exam Date & Time: 08-May-2023 (09:30 AM - 12:30 PM)



## MANIPAL ACADEMY OF HIGHER EDUCATION

### INTERNATIONAL CENTRE FOR APPLIED SCIENCES END SEMESTER THEORY EXAMINATION-MAY 2023 IV SEMESTER B.Sc.(APPLIED SCIENCES) IN ENGG. PROGRAMMABLE LOGIC CONTROLLER [IMET 242]

Marks: 50

#### Duration: 180 mins.

#### Answer all the questions.

#### Missing data if any, may be suitably assumed.

1)	A)	Using both a counter and arithmetic function blocks, draw a ladder logic for a light to be ON only when the number of pulses are between 34 and 41.	(4)
	B)	Discuss about the differences between SCADA and DCS (minimum four points).	(4)
	C)	Define JMP and LBL instructions.	(2)
2)	A)	Design a ladder diagram to control the operation of the entry gate of the automatic car parking system. Entry and exit of a car is detected by sensors. A PLC will keep a record of number of cars enter and exit. Maximum 50 cars can be in the parking area. The gate at the entrance (controlled by electric motor) will be kept open only when number of cars in the parking area is less than 50.	(3)
	B)	With relevant example for each, explain the following subroutine instructions: JSR , SBR, RET	(5)
	C)	State any four industrial applications of PLC	(2)
3)		Explain in detail the Bit Shift registers.	(5)
	A)		
	B)	Draw the block diagram of Automation.	(3)
	C)	Mention any two disadvantages of PLC.	(2)
4)		Discuss the effect of adding Differential Controller in a system.	(3)
	A)		
	B)	Construct a ladder logic diagram that will implement the following function. If the result is greater than 100, then an output light 'P' will be turned ON.	(5)