Question Paper

Exam Date & Time: 16-Jun-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 - S2]

Marks: 50 **Duration: 180 mins.**

Answer all the questions.

Missing data if any, may be suitably assumed.

1)	A)	Develop a ladder logic program that will give output 'B', 20 seconds after 'A' has been turned ON. After 'A' is pushed, there will be a 20 second delay, and the timer will reset. After 'A' has been pushed 3 times, 'B' should go OFF.	(4)
	B)	With necessary diagram, explain AC Discrete input module in a PLC.	(4)
	C)	Give any four examples of Special I/O Modules used in PLC.	(2)
2)	A)	Draw the schematic diagram of the first Generation SCADA Architecture (monolithic).	(3)
	B)	Two conveyors (A and B) feed a main conveyor. The main conveyor count can only be determined from count of parts entering from other two conveyors. The count on each conveyor is determined by a counter. Assume ADD function is enabled every 30s. If the main conveyor count exceeds 20, a light should go ON.	(5)
	C)	On which two factors does the Scan Time depend?	(2)
3)	A)	State the difference between Serial and Parallel data transfer in PLC (At least four points).	(4)
	B)	Explain DeviceNet communication protocol.	(4)
	C)	Mention any two advantages of PLC over conventional Relays.	(2)
4)	A)	Discuss the effect of adding Integral Controller in a system.	(3)
	B)	Two conveyors (A and B) feed a main conveyor. The main conveyor count can only be determined from count of parts entering from other two	(5)