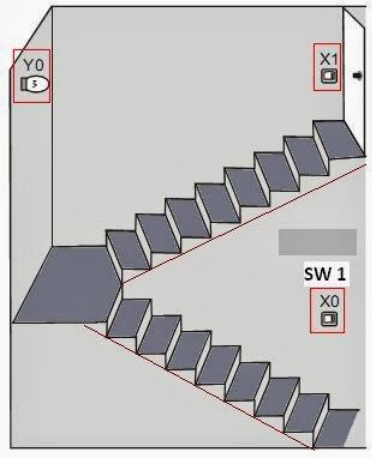
MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
(A constituent unit of MAHE, Manipal)

DEPARTMENT OF MECHATRONICS
VII SEMESTER B. TECH MECHATRONICS ENGINEERING
END SEMESTER EXAM
SET-1

Subject: Industrial IoT **Subject Code: MTE 4304**
Time: 2:30PM-5:30PM **Date: 12/12/2023**

Important Instructions:
1. Answer all the questions.
2. Data not provided may be suitably assumed and justified.

S. No.	Question	M	CO	PO	LO	BL
1A	Appraise what is PLC? How it is different from normal controller? What are the different modules in PLC explain in detail?	5	3	2	2	4
1B	Articulate what is Industrial IoT? Enlist the Industrial IoT components.	3	1	2	2	3
1C	List the major 7 applications of industrial IoT with brief explanation.	2	1	2	4	3
2A	What is industrial process controller? Explain how proportional, integral, and derivative control work for the process control?	4	3	6	6	3
2B	Design PLC Ladder Logic for Stair-Case wiring using two Toggle Switches in programmable logic controllers (PLC) for figure below and describe the ladder program steps in detail.  Figure 2(b)	4	3	5	5	6
2C	Create PLC ladder logic for (I) OR gate (II)AND gate	2	3	5	5	6
3A	Explain CAN architecture. Explain the CAN bus architecture with diagram.	5	4	2	2	3
3B	What is real time Ethernet? Explain the Characteristics and advantages of real time Ethernet.	3	4	3	4	3

3C	Explain AS-Interface deployed for industrial automation.	2	4	3	4	3
4A	Create a Security Systems Development Life Cycle (SecSDLC) using the Systems Development Life Cycle (SDLC). List the steps that are unique to the SecSDLC in each phase of the SDLC.	5	5	6	9	6
4B	Classify the counters in PLC. Explain each with the diagram.	3	3	2	2	4
4C	Enlist the advantages of use of PLC in automation.	2	3	5	4	3
5A	Define Process Field Bus and explain following types of Profibus a. Profibus-PA b. Profibus-DP c. ProfiSafe d. ProfiNet	4	4	2	2	3
5B	Define Database engine. Explain Storage manager, Query processing and Transaction manager in detail.	4	5	5	4	3
5C	Compare different wireless technologies used in industrial automation.	2	4	3	4	4