

1. **Question 1 is compulsory.**
2. Attempt **any three** questions from the remaining five questions.
3. Assume suitable data, if necessary.
4. **Figures/sketches** carry weightage.

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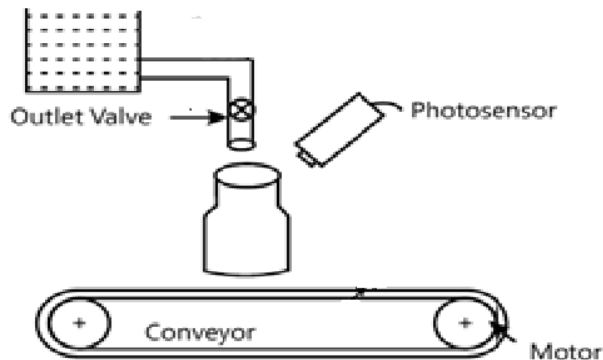
Q5 a. Design PLC Ladder diagram for water bottle filling mechanism

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Process Description:

Whenever bottles are placed on the conveyor, motor starts and conveyor moves and when photo sensor senses the bottle, motor stops and outlet valve opens for 30 sec. After 30 sec valve is closed, motor starts and conveyor moves. When another bottle is detected, the process is repeated. Implement this in PLC using Ladder Diagram programming language.

Refer following figure



b. Write short note on acceleration sensor

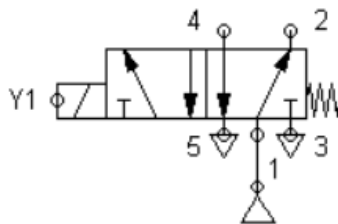
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Q6 Write short note on following (5 marks each)

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a. Brushless DC Motors

b. Identify following valve specification & discuss in detail.



c. AS/RS system

d. Applications of robot

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