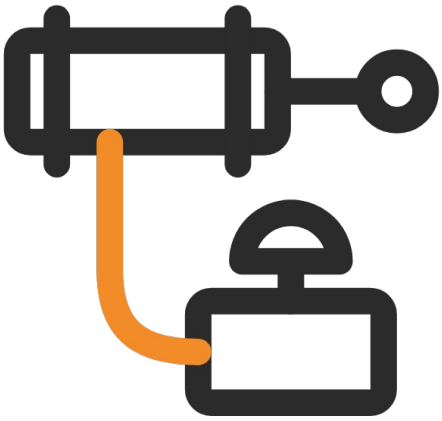
Lesson Pn8 Review Questions

Describing and Designing Circuits



Answer every question in your jotter. Show your working. Tap a question below to go to it. Tap **Show answer** under a question to mark it.

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Answers	Review Questions: marking instructions	8

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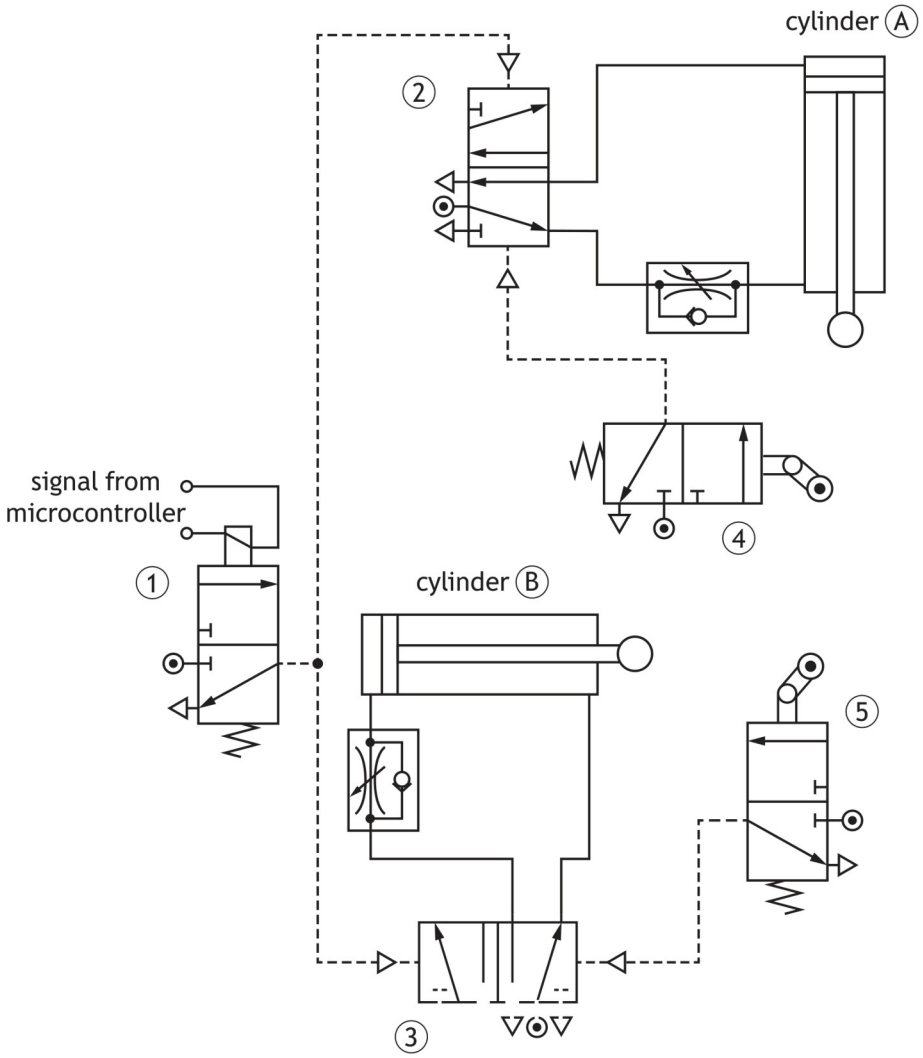
Questions

2023 Section 2 Question 9 (a)

1. A pneumatic circuit is used to arrange bottles ready for packaging in a production line.



The pneumatic circuit used to arrange the bottles is shown below.



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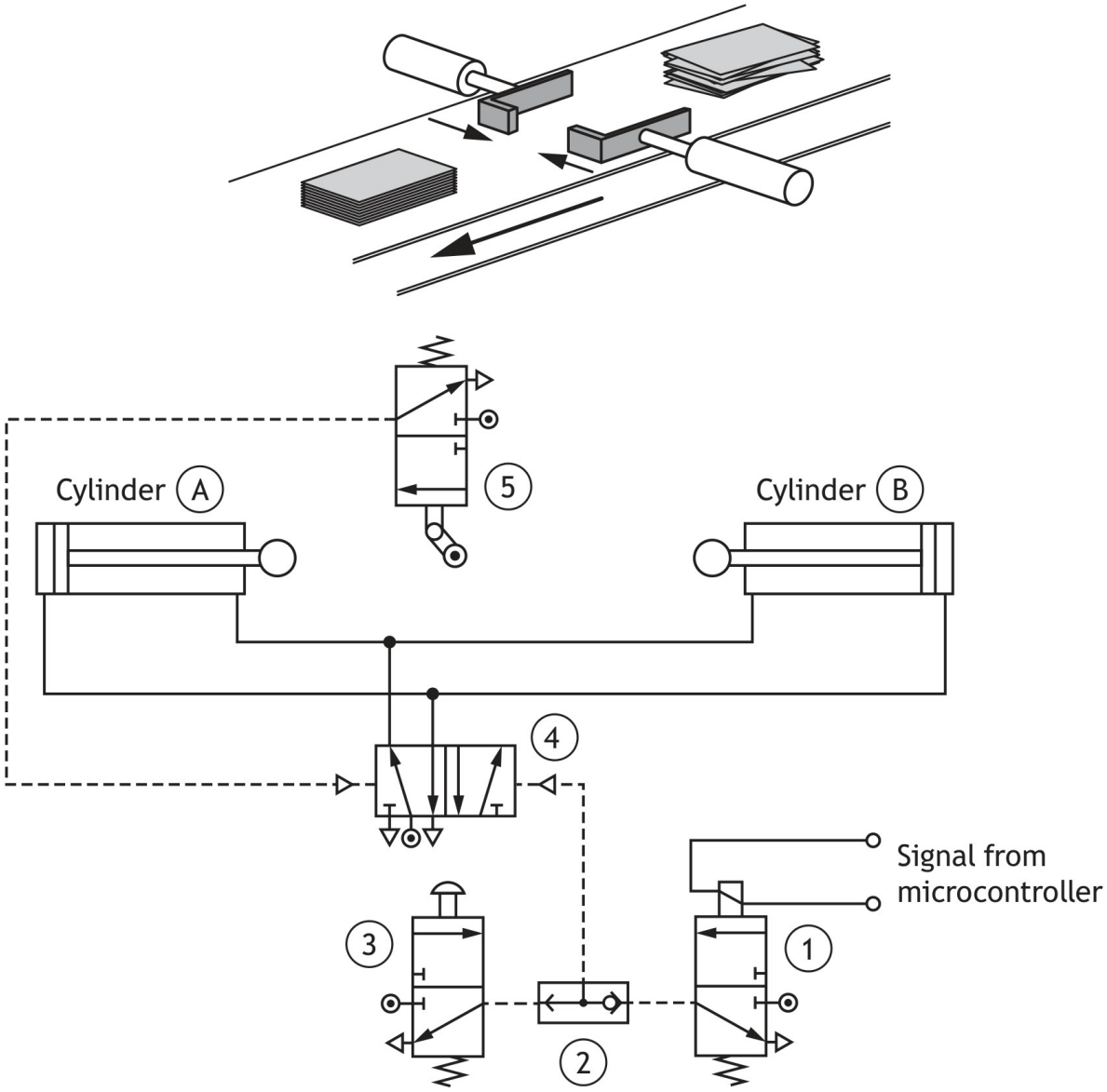
(a) Describe the operation of the circuit shown opposite. **5**

When a signal is received from the microcontroller . . .

Show answer ›

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2. A pneumatic circuit used to process components on a production line is shown below.



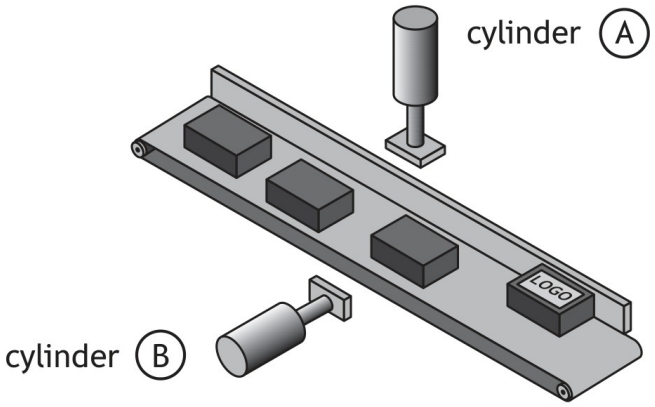
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(a) Describe, using appropriate terminology, the operation of the circuit. **3**

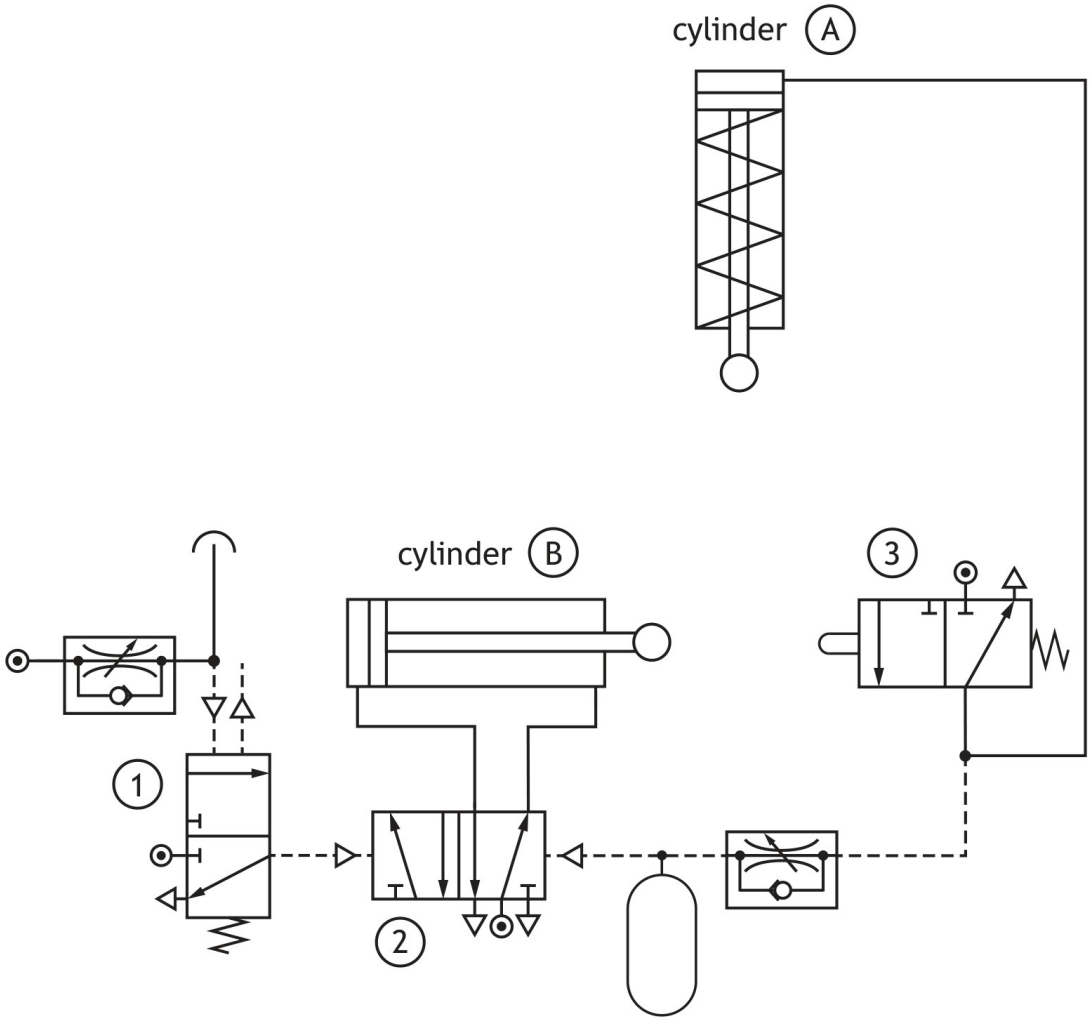
Show answer ›

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3. Pneumatics is used to stamp a logo onto products.



A diagram for a pneumatic circuit that is used to stamp the logo onto the products is shown below.



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(a) Describe the operation of the circuit shown opposite.

When the air bleed is covered valve (1) *is actuated . . .* _____

Show answer ›

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Answers

Check your understanding (booklet)

1 The words on the answer line, e.g. "When valve 1 is actuated . . ."

2 Each valve by its number and each cylinder by its letter.

3 Outstrokes and instrokes.

4 There is a time delay.

5 Four steps (one mark for each).

6 It must say the valve is actuated or changes state.

Answer to question 1

2023 Section 2 Question 9 (a)

Marking instructions

Question			Expected response	Max mark	Additional guidance
9.	(a)		*When a signal is received from the microcontroller …*	**5**	Descriptive response.
			valve 1 actuates and pilot air switches valve 2 and piston A outstrokes.		1 mark for valve 1/2 causing piston A to outstroke.
			..piston A actuates valve 4 which sends pilot air to reset valve 2 causing piston A to instroke.		1 mark for valve 4 and 2 to cause piston A to instroke.
			valve 1 actuates and pilot air switches valve 3 and piston B outstrokes.		1 mark for valve 1/3 causing piston B to outstroke.
			..piston B actuates valve 5 which sends pilot air to reset valve 3 causing pistion B to instroke.		1 mark for valve 5 and 3 causing piston B to instroke.
			Piston A outstrokes slowly and piston B instrokes slowly.		1 mark for piston A outstroking slowly **and** piston B instroking slowly. If response describes valve 1 (or both 5/2 valves) causing both pistons to outstroke then 2 marks can be awarded. Instroking conditions must clearly link both named valves to the correct cylinder.

‹ Back to question 1

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Answer to question 2

2017 Section 2 Question 11 (a)

Marking instructions

Question			Expected answer(s)	Max mark	Additional guidance
11.	(a)		Valve 1 OR 3 is actuated. Air is sent to valve 4 causing both pistons to outstroke. The piston from cylinder A will actuate valve 5 causing both pistons to instroke.	3	1 mark for OR statement 1 mark for both pistons outstroking 1 mark for valve 5 **and** both pistons instroking

‹ Back to question 2

Answer to question 3

2024 Section 2 Question 15 (a)

Marking instructions

Question			Expected response	Max mark	Additional guidance
15.	(a)		*When the air bleed is covered valve 1 is actuated …* Pilot air changes the state of valve 2 which will cause piston B to outstroke. Piston B will actuate valve 3 (sending air to cylinder A) which will cause piston A to outstroke. When valve 3 is actuated a time delay will occur/a time delay will occur before changing the state of valve 2. (Pilot air) changes the state of valve 2 which will cause piston B to instroke. When plunger on valve 3 is unactauted, piston A will instroke.	5	Descriptive response. 1 mark for changes the state of valve 2 and B outstroking. 1 mark for actuating valve 3 and outstroking A. 1 mark for time delay (stated or inferred) after valve 3 actuates/ after A outstrokes/before valve 2 resets. 1 mark for changes the state of valve 2 and instroking B. 1 mark for A instroking including condition stated or inferred. Accept actuate as change of state for valve 2.

‹ Back to question 3

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