

KU	PS
1 0	
	2 1 0
4 3 2 1 0	

1. Chemro is a company that manufactures poisonous chemicals.

(a) Chemro uses robots on the production line because of the *hazardous* environment.

What is meant by the word *hazardous*?

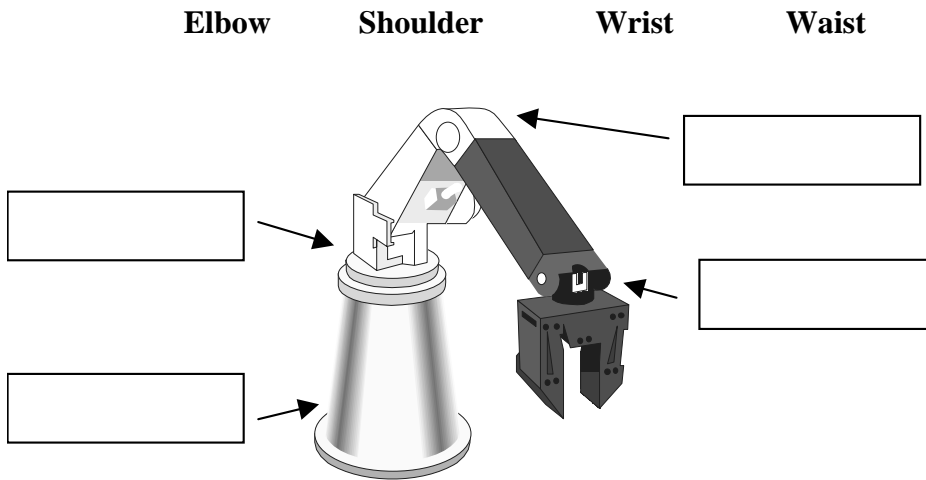
(b) Chemro have installed a complex burglar alarm to prevent unauthorised access to the factory.

Suggest **two** types of sensor that the alarm might have.

1.

2.

(c) Name the parts of the robot using the words listed below.



2. Car manufactures often use robot arms to build cars on a production line.

(a) Give **two** reasons why this is better than employing humans to do the welding.

(b) The human workers have been *retrained*. Explain what retraining means.

(c) The robot arm only works when the car is in the correct position. What *device* is used to tell the robot that the sections are in place and it can start to weld?

(d) Is the robot arm a *stationary* or a *mobile* robot?
Tick **one** box.

Stationary Mobile

(e) The cars are designed using a *CAD* system. What does **CAD** stand for?

C _____ **A** _____ **D** _____

(f) Describe each of the steps listed below using the words from the following list:

Process Control Output Input Print

Instructions are sent to the robot arm from a computer.

The robot arm carries out the instructions.

The sections of the car are welded together.

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2 1 0	
2 1 0	
1 0	1 0
2 1 0	1 0
	3 2 1 0

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	1 0
	1 0
	1 0

3. Pure Sense produces deodorants and other cleansing products for sale to the public.

(a) The company has decided to automate all parts of the production of the chemicals and the containers they come in.

(i) They sell some of their deodorants in special metal containers. They use a computer controlled machine to cut the metal. The cases have to be identical and well made.

They use a computer controlled machine for this job because

(ii) Sometimes they get rush orders that mean they need thousands of parts at short notice.

An automated system is used here because

(iii) During production some of the chemicals produce poisonous fumes.

An automated system would be used because
