

Scenario 1

Questions 1, 2 and 3

WIMBA manufactures cars.

It makes its own paint in a separate department so that the cars can be painted before they come off the production line.

Robot arms are used to carry out many of the manufacturing processes. In order that they perform at maximum efficiency, the temperature must not rise above or fall below 17 °C.

A Programmable Logic Controller (PLC) using a Proportional Integral Derivative (PID) algorithm keeps the temperature at 17 °C.

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- 1 Tick the **four** most accurate statements about the use of end effectors when attached to robot arms.

	✓
Cameras are used to inspect/check work.	
Sanders are used to produce a shiny finish.	
Grippers are used to pick up parts.	
Riveters are used to place and tighten nuts.	
Screwdrivers are used to place/screw in and tighten screws.	
Polishers are used to prepare the car body for painting.	
Spanners are used to paint the car body.	
Vacuum cups are used to pick up parts.	
Sprayers are used to weld parts of the car body together.	
All end effectors have to be changed by a human.	

[4]

- 2 Tick the **four** most accurate statements about the use of PLCs and PIDs.

	✓
A PID algorithm is a type of computer/microprocessor used for a single purpose.	
A PLC has analogue and digital inputs.	
A PLC is not used in processes which are continuous.	
There is rarely any input to a PLC from the user once it has been programmed.	
The PLC causes the PID algorithm to make proportional changes to the temperature.	
A PLC is used in this process as the pre-set value is constant.	
A PLC is a type of computer used for many different purposes.	
The PID algorithm calculates the difference between the input value and the pre-set value.	
The PID algorithm causes the PLC to switch the heating element on for long periods of time.	
The PLC does not make use of any sensors.	

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3 Using examples from the scenario, describe what is meant by:

batch process control;
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continuous process control;
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discrete process control.
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Scenario 2**Questions 4, 5, 6, 7 and 8**

Louisa is the chief car salesperson with GoodCars Sales in Christchurch. Part of her job is to go on training courses which usually take place in Wellington, some distance away. This involves her being out of the salesroom quite often. She keeps a spreadsheet of training courses she attends and the cost of each session.

While she is out of the salesroom, Louisa uses email to remain in contact with her sales people. Paul, Louisa's deputy, has suggested that Louisa could set up a phone conference to stay in touch with her colleagues instead.

Most of GoodCars' customers live locally. The company is in competition with a number of other local car sales companies. At the moment it advertises its cars using locally distributed flyers. It is considering using slide show presentations situated in a local shopping mall.

The directors of GoodCars are considering having a website which customers could use to buy cars, which may cause some sales people to be made unemployed.

4 Below is part of the spreadsheet that Louisa keeps about her training courses.

	A	B	C	D	E	F	G
1							
2					Course Code	Course title	Course cost per day
3					A	Automotive Studies	\$250
4					B	Customer Care	\$325
5					C	Financial Competence	\$225
6							
7	Date of course	Duration (days)	Course Code	Cost			
8	12-01-17	2	B	\$650			
9	25-01-17	1	C	\$225			
10	08-02-17	3	A	\$750			
11	15-03-17	2	C	\$450			
12	18-04-17	3	B	\$975			
13	28-04-17	2	A	\$500			

(a) Write down the formula which should go in cell D8 which involves the use of the VLOOKUP function.

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(b) Give **three** reasons why Louisa only wants to type in the course code in column C rather than the full title.

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6 (a) There are three types of advertising: Service, Product and Business.

Identify and describe the type that GoodCars use, explaining why.

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(b) Compare and contrast the use of flyers with the use of a slide show.

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Scenario 3

Questions 9, 10 and 11

Shanghai Garments (SG) operates a phone shopping system whereby customers phone in orders and have the garments delivered to their homes.

Each customer has an account and pays at the end of the month what they owe on their account.

During the course of a normal day, a transaction file (order file) is created which has the garments ordered and some details of the customer as well as the amount of the transaction. This file contains the absolute minimum of information.

There is a master file which contains all the customer details including how much money they owe. The master file (customer file) is updated at the end of each day.

There is a separate file which contains the details of each garment in stock.

SG have decided that they want to update the current system of record keeping. They have employed Ho, a systems analyst, to organise the creation of this new system.

- 11 When Ho has implemented the new system he will provide technical documentation. For each of the following types of technical documentation, describe **three** items which would be present in each.

Systems:

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Program:

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