Topic: 1.3.3 Input

Oct/Nov 2006 P1 (7010)

2 Name two devices used for direct data capture. Give one application for each devicenamed. [4]

12 An airport has multimedia kiosks linked to a central computer.
(a) State two input devices, other than a keyboard, which might be used at the multimediakiosks.
(b) Give two items of information that might be accessed from multimedia kiosks. [2]
(c) State one advantage and one disadvantage for the airport of providing multimediakiosks. [2]

May/June 2007 P1 (7010)

3 Describe the difference between speech recognition and speech synthesis. [2]

12 Describe three ways you could modify a typical input/output environment to enable peoplewith disabilities to use the computer system. [3]

13 Items sold in supermarkets are all marked with bar codes.
(a) Customers are given an itemised bill at the checkout. Give two advantages to thecustomer. [2]
(b) Give two ways the information on the bar code can be input at the checkout. [2]
(c) Describe how bar codes are used in automatic stock control. [3]

Oct/Nov 2007 P1 (7010)

12 A company checks its electrical equipment every three years. To help make sure that everyitem is checked at the correct time, the company has decided to put barcodes on theequipment. The barcode contains:
• type of equipment (e.g. monitor)
• location (e.g. Room 507)
Every time equipment is checked, the barcode is scanned and the data stored on a file.
(a) Give one other piece of information that should be on the barcodes. [1]
(b) Give one example of other information that should be stored on the file itself. [1]
(c) Give two advantages of this system rather than using sticky labels on the equipmentmarked, for example, "Do not use after May 2007". [2]
(d) Describe another application where barcodes could be used. [1]

May/June 2008(7010)

1 Explain, using examples where appropriate, the meaning of these computer terms.
(d) laptop computer [2]
(e) trackerball [2]

4 Name two types of automatic data capture and give one application for each type named. [4]

Topic: 1.3.3 Input

Oct/Nov 2008 P1 (7010)

6 A supermarket uses a computer system to control and order stock. All products sold areidentified with a bar code which can be read at a Point Of Sale (POS) terminal.
(a) Apart from stock control, give one advantage to the supermarket of having bar codeson the products. [1]
(b) Give one advantage to the customer of using POS technology. [1]
(c) Describe how a computerised stock control system works. [3]
Explain, using examples where appropriate, the meaning of these computer terms.
(a) mouse [2]

May/June 2009(7010)

2 Name three devices used for automatic data capture. [3]

Oct/Nov 2009 P1 (7010)

8(b) The supermarket has decided to fit sensors at the shop entrance to count peoplecoming in and leaving.
i) What type of sensor would be suitable to detect people? [1]
(ii) How could the supermarket use the information obtained from these sensors? [2]
(c) The supermarket has decided to fit information screens at various locations forcustomer use. These information screens do not use keyboards.
(i) Give one example of a suitable input device. [1]
(ii) What information could be made available to supermarket customers? [1]
(iii) Give one advantage of using this system rather than displaying signs and noticesaround the supermarket. [1]

May/June 2010 P11 (7010)

6 (a) Give three different types of device that allow human beings to interface with computersystems. [3]
(b) Give three automatic data capture devices and give a suitable application for eachdevice. [6]
7 Describe how a supermarket would use computer technology to carry out automatic stockcontrol. [3]

May/June 2010 P12 (7010)

8 A supermarket makes use of barcodes on all its goods as part of its automatic stock controlsystem.
(a) Describe how the price is found for each item sold. [2]
(b) The following are steps in the automatic stock control system.
Number the steps in the correct order.

if stock level ≤ minimum stock level	
report printed out for the manager	
stock level reduced by 1	
new stock value written back to file	
more items are ordered automatically	

[4]

9 A factory uses a computer system to store information about customers, spare parts andgeneral administration.
(a) Spare parts can be identified by selecting from diagrams on a computer screen.
Describe what hardware would be needed to allow the parts to be selected in this way.[2]

Oct/Nov 2010 P13(7010)

6 Complete the following table by writing down the most appropriate data collection methodfor the given application.

Application	Data collection method
Reading information from a credit/debit card	
Choosing an option from a customer information screen at an airport	
Reading the results from a questionnaire where pencil lines were used to choose options	

[3]

May/June 2011 P12 (7010)

The following table shows FOUR applications which require specialist INPUT devices.
For EACH application, suggest ONE possible INPUT device and give a reason for your choice.

Topic: 1.3.3 Input

APPLICATION	INPUT DEVICE	REASON FOR CHOICE OF DEVICE
Virtual reality application		
Disabled person communicating with a computer system		
Automatic stock control system at a supermarket		
Information kiosk at an airport using a GUI interface		

[8]

May/June 2011. P12 (9691)

1. (a) Define the terms:
(i) hardware
(ii) software **[2]**

May/June 2011. P13 (9691)

1. (a) Define the terms:
(i) input device
(ii) storage device **[2]**

Oct/NOV 2011. P13 (9691)

1 (a) Describe the purpose of the following:
(i) Input devices;
(ii) Output devices. **[2]**

Topic: 1.3.3 Input

Oct/Nov 2011 P13 (7010)

3 (b) (i) What is meant by automatic data capture?
(ii) Name a device used in automatic data capture and describe an application thatuses it.
[3]

May/June 2012. P11/12 (9691)

1 (c) A local hockey league is run by a secretary from home. The secretary is responsiblefor all fixtures and league tables.
The secretary is blind and uses her home computer for carrying out the necessarytasks.
State a suitable hardware peripheral for each of input, output and storage, which thesecretary could use. Justify your choices. **[4]**

May/June 2012. P13 (9691)

4 When data is to be entered into a computer system it is sometimes entered using manual methods and sometimes it is captured and entered automatically.
Describe the following methods of entering data into a computer system automatically. In each case give an example of where it would be used.
(i) Barcode reading **[3]**
(ii) Magnetic stripe card reading

Oct/NOV 2012. P11 (9691)

8 An interactive information system is being designed for use in the terminal building of anairport.
(a) (i) State an input device which would be suitable for use in this application.
Justify your choice. **[2]**

Oct/NOV 2012. P12 (7010)

3 For each of the following five groups of hardware items, write down a computer application that would need those items.

Topic: 1.3.3 Input

List of hardware items	Application
webcam, microphone, speakers	
barcode reader, POS terminal	
pressure sensor, ADC, lights, siren	
data gloves, data goggles	
light pen, plotter, 3D printer	

[5]

Oct/NOV 2012. P12 (9691)

1 (a) (i) Define what is meant by hardware. **[1]**

(ii) Define an input device and state why it is needed. **[3]**

8 A pocket sized game system is based around a microprocessor.

(a) (i) State an input device which would be suitable for use in this application. Justifyyour choice. **[2]**

Oct/NOV 2012. P13 (9691)

1 (a) (i) Define what is meant by hardware. **[1]**

(c) The barcodes of goods are read at the checkouts.
Describe barcodes and explain how they are read at the checkouts and used by thecomputer system. **[6]**

8 An interactive information system is being designed for use by the air-traffic controllers atan airport. Information about all planes must be available to the controllers who then ensurethat the planes stay far enough apart not to be a danger to each other.

(a) (i) State an input device which would be suitable for use in this application.
Justify your choice. **[2]**

Topic: 1.3.3 Input

Oct/Nov 2012 P13 (7010)

10 You have just been appointed as the IT representative of a small engineering company.
The company needs to buy:
• input devices
Choose a suitable example for each and give a reason for your choice. **[2]**

May/June 2013. P11/P12 (9691)

4 (a) An airport uses electronic devices as part of its security systems.
One system matches the face of a passenger with the photograph in their passport.
What two input devices would be needed to do this? Give reasons for your choice ofdevice. **[4]**

(b) When the passenger goes to the check-in desk, their luggage is weighed.

(i) How does the computer system capture the luggage weight? How does it Then check that it does not exceed the airline's weight limit? **[3]**

(ii) The computer also prints out a label identifying passenger ID, flight number and destination. This label, which is tied onto the luggage, is computer readable.
Describe a suitable data capture system which could be used to read these labels so that the luggage can be tracked. **[2]**

May/June 2013. P11 (7010)

5 Name a suitable hardware device to enable automatic data capture in each of the followingapplications. Each device must be different.

Application	Hardware device
automatic stock control system in a supermarket	
keeping track of the livestock on a large farm	
input data into a computer using speech recognition	

[3]

May/June 2013. P12 (7010)

9 Thin film technology is becoming increasingly common. This uses material as thin as a sheet of paper but which acts just like an LCD monitor. A microprocessor is used to control the device and solid state memories are used to supply the data.
(a) Describe two advantages of thin film technology. [2]
(b) Describe two applications that could use thin film technology. [2]

Topic: 1.3.3 Input

May/June 2013. P13 (9691)

3 A computer system is being developed to monitor seismic (earthquake) activity in theAntarctic. Sensors are being used to detect ground tremors.

(a) Describe how the sensors and a computer would be used to gather data which isprocessed to warn scientists of any abnormal seismic readings. **[4]**

(b) The information received is processed and then displayed on large output screens in a control room.

(i) Scientists must be able to quickly assess the incoming data.
Describe a suitable interface. Include use of colour, content and layout in yourdescription. **[3]**

(ii) Describe the input devices you would expect to see in the control room.
Justify your choice of devices.

May/June 2013. P13 (9691)

9 A supermarket uses barcodes as part of its item price retrieval and automatic stock controlsystem.
A customer takes items to the point-of-sale (POS) checkout. The barcodes are scanned.

(a) Describe what happens next regarding data retrieval and stock control. **[5]**

(b) Name two devices needed at the POS checkout.
Give a reason for your choice of device. **[4]**

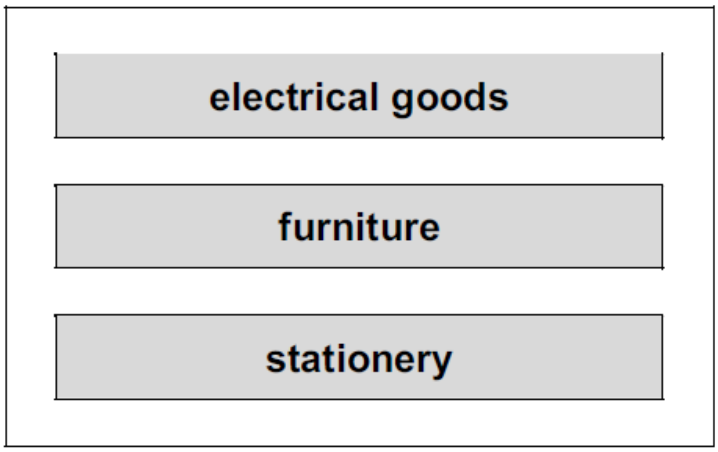
Oct/Nov 2013.P12(7010)

4 (a) Sevenhardware items are shown on the right hand side in the diagram below. Three applications are shown on the left in the diagram.
By drawing arrows, link each application to the appropriate hardware items (each hardware item must be used once only):

	speakers
computer aided design (CAD)	light pen
	microphone
video conferencing	spaceball
	data goggles
virtual reality	webcam
	data gloves

[3]

12 A shop uses an information screen linked to a computer to allow customers to order goodsdirectly.
The first screen shows three options:



(a) What is the best input device to allow customers to choose one of the three options?[1]

Topic: 1.3.3 Input

Oct/Nov 2013. P13(7010)

5 A website has been set up allowing users to access the Periodic Table. Part of the table is shown below.

H																	He
Li	Be											B	C	N	O	F	Ne
Na	Mg											Al	Si	P	S	Cl	Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr

A user selects an element from the table and is then directed to another web page where details of the chosen element can be found.

(a) (i) What would be the most suitable input device for this application? [1]

(ii) Describe how your chosen input device would interact with the table. [1]

(b) Give two advantages of this system when compared to finding the same information from books. [2]

(c) Apart from security issues, give two disadvantages of this system compared to using books. [2]

May/June 2014 P12 (7010)

6 The following diagram shows six descriptions of automatic data capture methods and six terms. Draw lines to connect each description to the correct term.

Topic: 1.3.3 Input

reading data directly from hard copy and converting into electronic/ computer-readable form	biometrics
use of fingerprint scans, retina scans, face identification, etc. as a way of identifying a person uniquely	data logging
recognises spoken word patterns and compares them to patterns stored in memory	optical character recognition (OCR)
use of minute electronic devices (containing microchip and antenna) that can be read from distances up to 5 metres	optical mark recognition (OMR)
automatic data collection using sensors	radio frequency identification (RFID)
system that reads pencil or pen marks on a piece of paper in pre-determined positions	voice recognition

[5]

Topic: 1.3.3 Input

May/June 2005 (9691)

4. (b) Cashcard machines (ATMs) provide keyboards to allow users to input data. Computers are often supplied with QWERTY keyboards to allow users to input data. Discuss the differences between these different types of keyboard, explaining why thedifferences are necessary. **[6]**

May/June 2007 (9691)

1. A student uses her home computer to:

- play games which she gets from a library;
- finish work that she brings home after starting it at school;
- produce a finished copy of the work to hand in to her teacher;
- communicate with her friends.

State the peripheral devices, apart from keyboard, mouse and monitor, which she would need.
Explain why each would be necessary. **[8]**

May/June 2015 P11 (2210)

2 (a) State what is meant by the term USB.
(b) Describe two benefits of using USB connections between a computer and a device. [2]

Monitoring & Control System

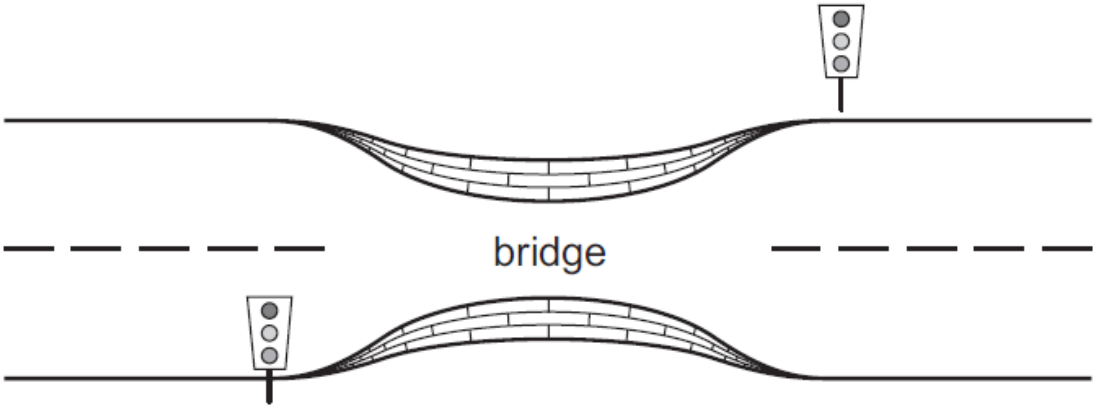
May/June 2006 P1 (7010)

8 Data-logging is used for monitoring the level of oxygen in a river.
(a) State one item of hardware that is used to collect the oxygen data. [1]
(b) Explain how the oxygen data is processed by the computer. [2]
(c) State two ways that the oxygen data could be displayed for a user to understand. [2]
(d) Explain what the computer would do if the amount of oxygen in the water is too high [1]
(e) Give two advantages of using data-logging for monitoring the oxygen data in a river [2]

Oct/Nov 2006 P1 (7010)

19 A computer is used to control the traffic lights at each end of a narrow bridge.

Topic: 1.3.3 Input



(a) State one type of sensor that could be used to detect a vehicle approaching the bridge. [1]

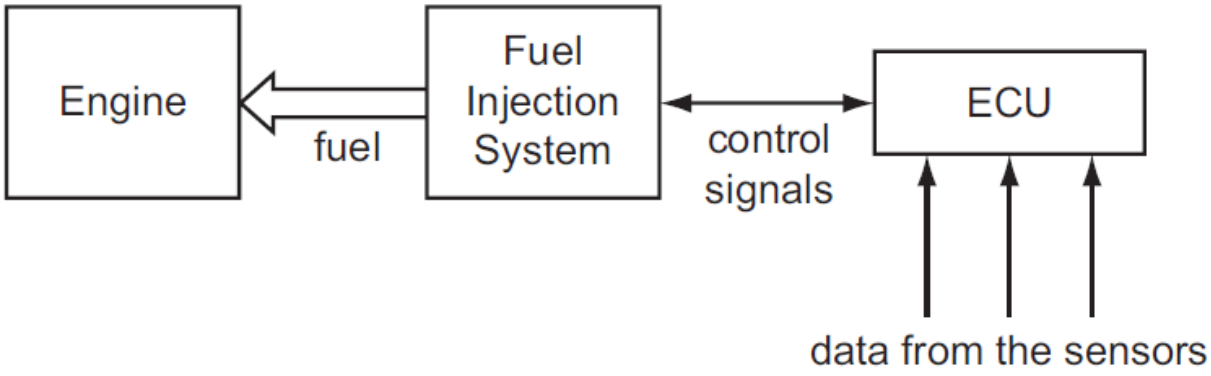
(b) Give one reason why an analogue to digital converter (ADC) may be needed. [1]

(c) Describe how the data received from the sensors is used to control the timing of the traffic lights. [3]

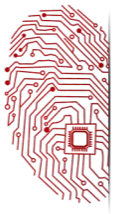
(d) If the computer controlling the traffic light system detects an error in the system, or fails completely, what should the lights on the bridge do? [1]

May/June 2007 P1 (7010)

16 Modern car engines use fuel injection systems which are controlled by microprocessors called Engine Control Units (ECUs). The fuel injection system controls the amount of fuel that goes into the engine. Sensors monitor engine conditions and feed the data back to theECUs.



(a) Name two types of sensors used to monitor engine conditions. [2]
(b) Describe how information from the sensors is used to control the fuel injection system [3]
(c) Give an advantage of using automatic fuel injection systems rather than simplermechanical fuel devices. [1]
(d) The fuel injection system operates in real time.
Why would batch processing not be appropriate in this application? [1]



Topic: 1.3.3 Input

Oct/Nov 2007 P1 (7010)

18 Monitoring of patients' vital signs (e.g. heartbeat) in a hospital is done automatically using sensors and computer hardware. Readings are shown on a screen both as a graph and as numbers.
(a) Why are readings shown in both graphical and numerical form? [2]
(b) When the heartbeat is being monitored, how does the system decide if the doctor/nurse needs to be warned of an abnormal reading? [1]
(c) Give two advantages of using this type of automatic monitoring. [2]
(d) How does this monitoring system differ from a control system? [1]

May/June 2008 P1 (7010)

16 The washroom in a hotel uses lights controlled by a computer system. If the washroom isunoccupied for 10 minutes, the lights go out automatically. As soon as someone enters, thelights come on.
(a) How can the system determine if anyone is in the washroom? [2]
(b) Write down a set of instructions which would enable the computer to decide when toturn out the lights. [3]
(c) Give one advantage of this automatic system. [1]

Oct/Nov 2008 P1 (7010)

11 A large city has decided to computerise totally its traffic management system. Traffic lights and electronic road signs are now under automatic computer control.
(a) Sensors are placed around the city to gather information about traffic. Describe what information would need to be gathered. [2]
(b) Describe two ways the information from the sensors could be sent to the central computer which is located several miles away. [2]
(c) Give two advantages of having the traffic in the city controlled in this way. [2]

May/June 2009 P1 (7010)

15 Aeroplanes use on-board computer power to allow them to operate more efficiently andsafely.
(a) How is data during a flight collected and fed back to on-board computers? [2]
(b) Why are computer systems thought to be safer than human pilots? [2]
(c) However, pilots are still used on all flights. Why is this? [2]
(d) What recent developments have led to more use of computer control in newly designedaeroplanes?
[1]
(e) Describe how the computer would know when to make course corrections during a flight. [2]
(f) At the airport, baggage check-ins use bar codes which are read by computers.
(i) What information would be stored on the bar code? [1]
(ii) Why do airports use the bar codes on baggage? [1]

Topic: 1.3.3 Input

Topic: 1.3.3 Input

Oct/Nov 2009 P1 (7010)

8 How could a computer simulation be used by a supermarket to reduce queuing at checkouts? [2]

(b) The supermarket has decided to fit sensors at the shop entrance to count people coming in and leaving.

(i) What type of sensor would be suitable to detect people? [1]

(ii) How could the supermarket use the information obtained from these sensors? [2]

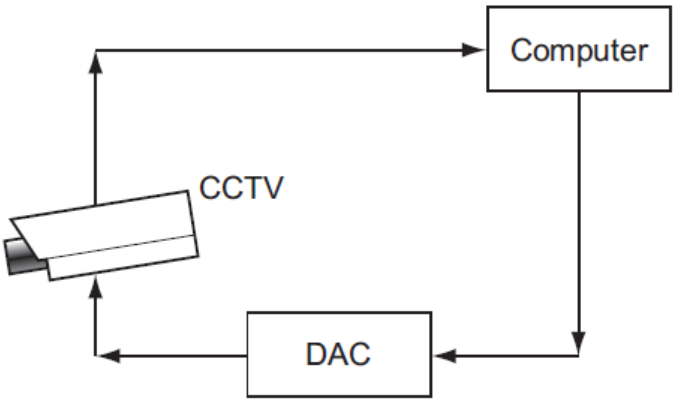
(c) The supermarket has decided to fit information screens at various locations for customer use. These information screens do not use keyboards.

(i) Give one example of a suitable input device. [1]

(ii) What information could be made available to supermarket customers? [1]

(iii) Give one advantage of using this system rather than displaying signs and notices around the supermarket. [1]

12 A digital security camera was set up as shown in the diagram.



The digital CCTV camera is connected to a computer. The computer can make the cameramove in any direction by sending out digital signals. The computer system has a 400 gigabyte hard disk.

(a) What hardware is needed to inform the computer that the camera needs to move tocapture an image? [1]

(b) Why is the DAC needed? [1]

(c) How could the computer use the camera to detect an intruder? [1]

(d) Give two advantages of using digital cameras. [2]

Oct/Nov 2010 P12 (7010)

11 A road system is to be operated using computer-controlled traffic lights. Sensors are used as part of the control system.

(a) The movement of traffic throughout the road system was first simulated on a computer. Describe what data would need to be collected and how it would be used in the simulation. [3]

(b) Give two advantages of carrying out a simulation first before introducing a new system. [2]

(c) Describe how the sensors, traffic lights and computer interact to control the traffic flowin the new system. [2]

Topic: 1.3.3 Input

May/June 2011 P11 (7010)

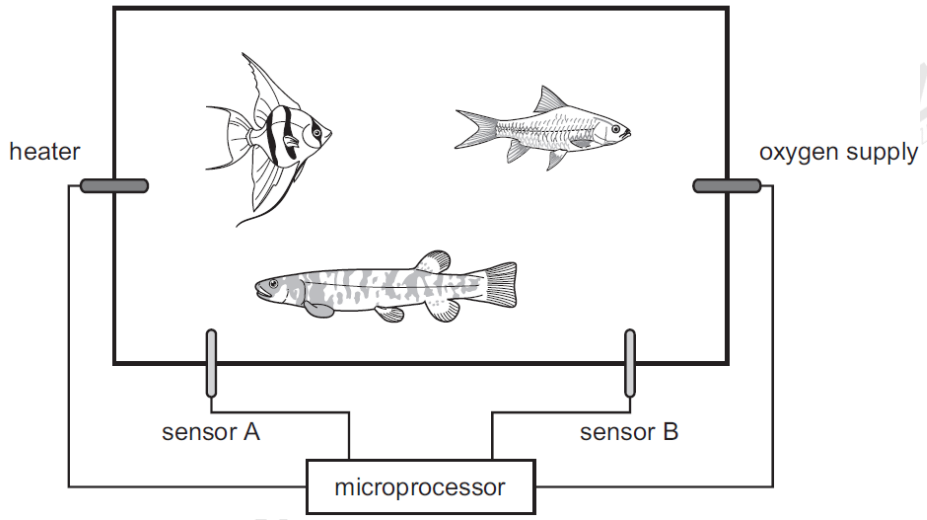
8 Many computer-controlled systems use sensors to gather physical data. For example,temperature sensors are used in the control of central heating systems.

(a) Name three other sensors and give a different application for each named sensor. [6]

(b) Describe how temperature sensors are used in computer-controlled central heatingsystems. [3]

Oct/Nov 2011 P12 (7010)

12 The conditions in a fish tank are being controlled using sensors and a microprocessor. Tokeep the fish healthy, the temperature must be at 25°C and the oxygen content needs to be20 ppm (parts per million). The tank contains a heater and an oxygen inlet controlled by avalve.



(a) Name the two sensors used in this application. [2]

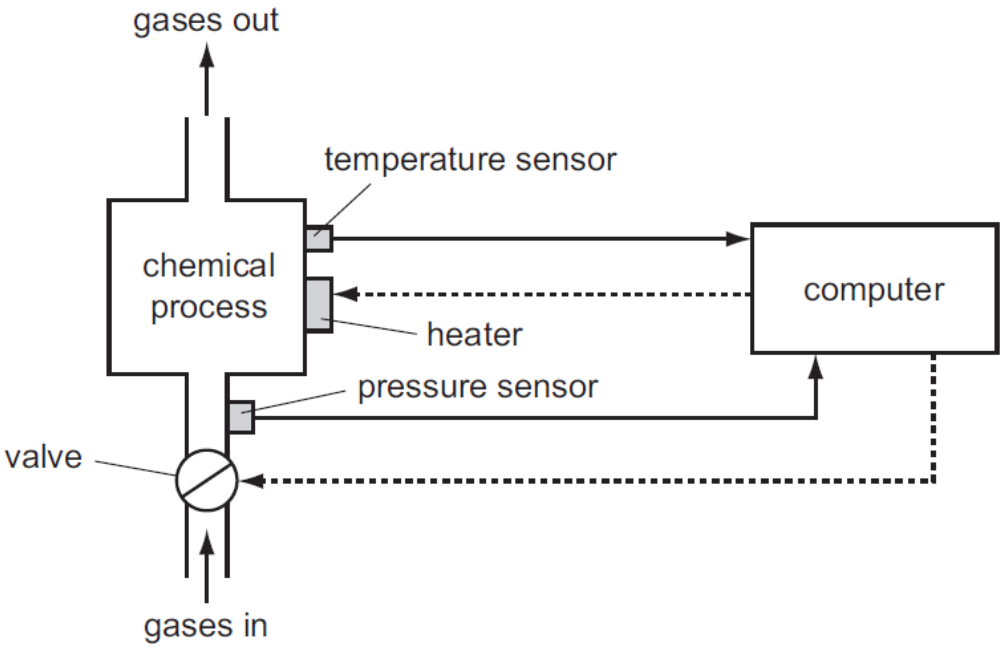
(b) Describe how the sensors and the microprocessor are used to maintain the correct conditions in the fish tank. [4]

(c) What safeguards would be needed to stop the fish tank temperature rising too high? [1]

Topic: 1.3.3 Input

Oct/Nov 2011 P13 (7010)

10 A computer system is being used to monitor and control a chemical process.

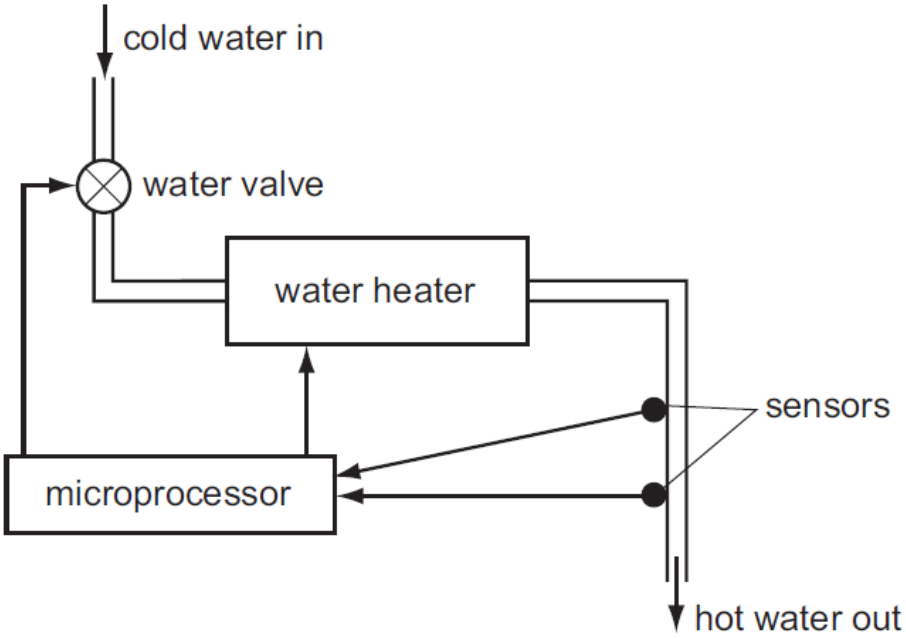


(a) Data are collected from sensors at regular intervals and compared with stored values.
(i) Describe how the computer uses this data when monitoring the chemicalprocess. [1]
(ii) Describe how the computer uses this data when controlling the chemical process. [1]
(b) What steps are necessary for the computer to control the temperature of the chemicalprocess?
[3]
(c) Name two other sensors and give a different application where they are used.

Topic: 1.3.3 Input

May/June 2010 P11 (7010)

A shower unit is controlled by sensors and a microprocessor.



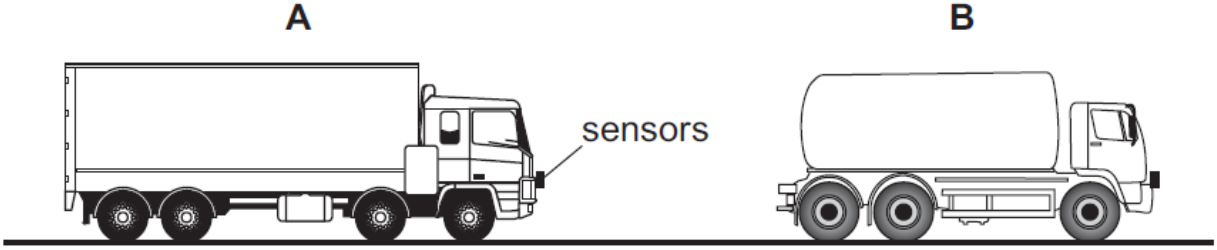
(a) Describe how the sensors and microprocessor are used to ensure the correct waterflow and water temperature are maintained. [4]

(b) Give one safety feature that could be built into the shower unit in case the sensorsand/or microprocessor fail. [1]

(c) What is the advantage of having microprocessor control rather than manual control ofwater flow and temperature? [1]

May/June 2010 P12 (7010)

14 A safety system has been developed to stop vehicles getting too close to each other on theroad.



If vehicle A gets too close to vehicle B, the brakes are automatically applied by a computersystem in vehicle A.

(a) What type of sensors could be used on the vehicles? [1]

(b) Describe what the safety system does to constantly monitor how close the vehicle is tothe vehicles in front and decide when to take action. [4]

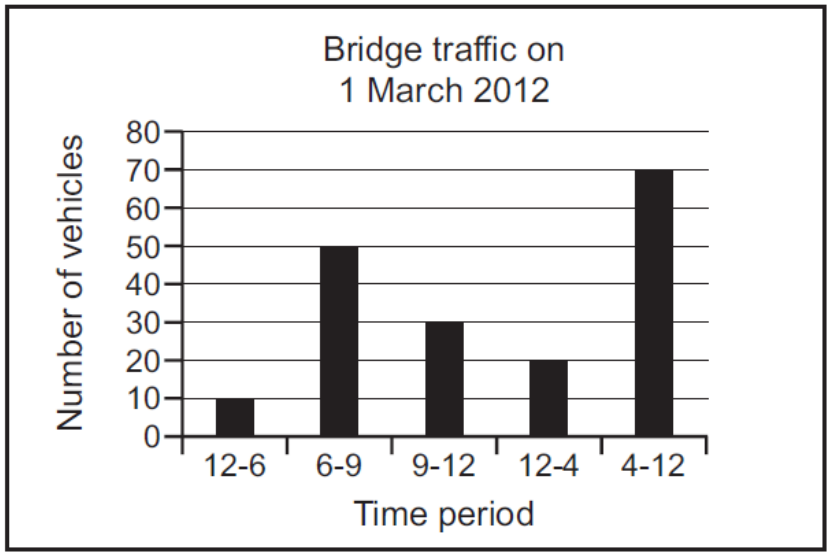
(c) Describe two potential problems with this safety system. [2]

May/June 2011 P11 (7010)

8 Many computer-controlled systems use sensors to gather physical data. For example,temperature sensors are used in the control of central heating systems.
(a) Name three other sensors and give a different application for each named sensor. [6]

May/June 2012 P11 (7010)

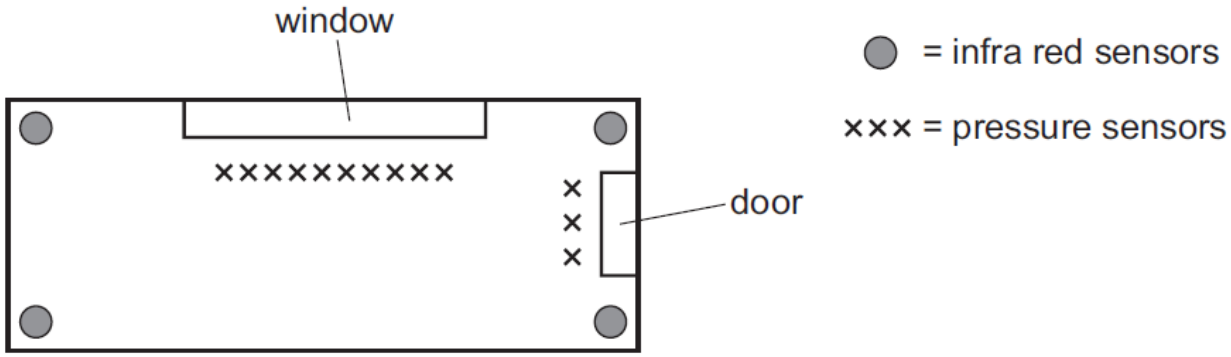
9 Vehicles passing over a bridge are detected automatically using sensors and a computer.
(a) What sensors could be used? [1]
(b) The graph below shows the number of vehicles counted during certain periods of the day. This graph is produced automatically at the end of each day.



A record is created each time a vehicle is detected. These records are processed togenerate the graph and for other purposes.
What data need to be stored in each record? [2]
(c) State two other methods of automatic data capture. In each case, name an applicationwhich would use this method. [4]

May/June 2012 P12 (7010)

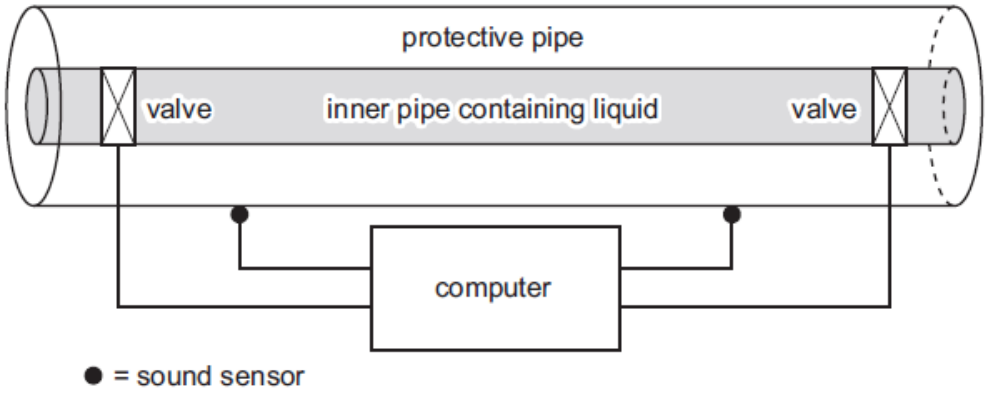
11 A room in a house is fitted with a computerised intruder alarm system:



(a) (i) Describe how the sensors and computer would be used to detect intruders.
(ii) Describe how the system warns that an intruder has been detected. [4]
(b) It is decided to automatically close door and window shutters if an intruder is detected. What additional processing and hardware would be needed? [2]
(c) Name another sensor that could have been used in this intruder alarm system. [1]
(d) What measures could be taken to stop or minimise the number of false alarms? [2]

Oct/Nov 2012. P12 (7010)

13 A chemical company uses pipes to transfer hazardous liquids. To protect the workforce,each pipe is inside a protective pipe.



Sensors are used to detect the sound of any liquid dripping into the protective pipe.
Actuators operate the valves that regulate the flow of liquid through the inner pipe.
This system is controlled by a computer.
(a) Describe how the sensors, actuators, valves and computer are used to monitor andcontrol the liquid in the pipe. [5]

(b) Give two advantages of using this computer-controlled system rather than visualchecks by the workforce. [2]

Topic: 1.3.3 Input

May/June 2013 P11 (7010)

1 Name a suitable sensor for each of the following applications.
Choose a different sensor in each application.
(i) control of a central heating system
(ii) operation of automatic doors
(iii) detection of intruders
(iv) monitoring of a greenhouse environment [4]

14 An aeroplane uses three separate computer systems to monitor and control the flightprocess while in auto pilot mode.
(a) Explain the advantages of using three computers rather than just one. [2]
(b) Sensors are used to measure air speed. The readings are sent to the three computers. Describe how the sensors and computers are used to control the aeroplane's speed inauto pilot mode. [4]

Oct/Nov 2013. P13 (7010)

6 Patients in a hospital are monitored for vital signs (for example, heart beat and temperature) by sensors and a computer system. Results are displayed on a monitor in the form of numbers and graphs.
(a) Describe how the sensors and computer system are used to monitor the patients and to alert doctors and nurses of a possible problem. [3]
(b) Give two advantages of using this system rather than 24 hour monitoring by nurses. [2]
(c) Why is the output shown in both graphical and numerical form? [2]

May/June 2015 P12 (2210)
2 The majority of mobile phones use touch screens. Three common technologies are used by different mobile phone manufacturers.
Choose one of the following mobile phone technologies:
• resistive
• capacitive
• infrared
Chosen technology .....

(i) Describe how your chosen technology works to allow a user to make selections by touching the screen. ..... [2]
(ii) Give **one** benefit and **one** drawback of your chosen technology when used on mobile phone touch screens. [2]

3 Four input devices, four descriptions and four applications are shown below.
Draw a line to connect each input device to its correct description. Then connect each description
to its correct application.

Input device	Description	Application
barcode reader	copies paper documents and converts the text and pictures into a computer-readable form	voice recognition
microphone	reads labels containing parallel dark and light lines using laser light or LEDs; the width of each line represents a binary code	reading passports
pH sensor	detects changes in acidity levels; data is often in analogue form	automatic stock control
scanner	device that allows audio signals to be converted into electric signals; these can be interpreted by a computer after being converted into digital form	monitor soil in a greenhouse

[6]

7 (a) Street lighting is controlled automatically. A light sensor and a microprocessor are used to decide when to switch each street light on or off.
Describe how the sensor, microprocessor and light interact to switch the street light on or off.
Include in your answer how the microprocessor stops the street lights being frequently switched on and off due to brief changes in the light intensity. [5]

(b) Name **three** different sensors (other than light and pH) and describe an application for each of these sensors.
A different application is needed for each sensor.

Sensor 1 .....
Application .....
.....
Sensor 2 .....
Application .....
.....
Sensor 3 .....
Application .....
..... [6]

Topic: 1.3.3 Input

Oct/Nov 2015 P12 (2210)

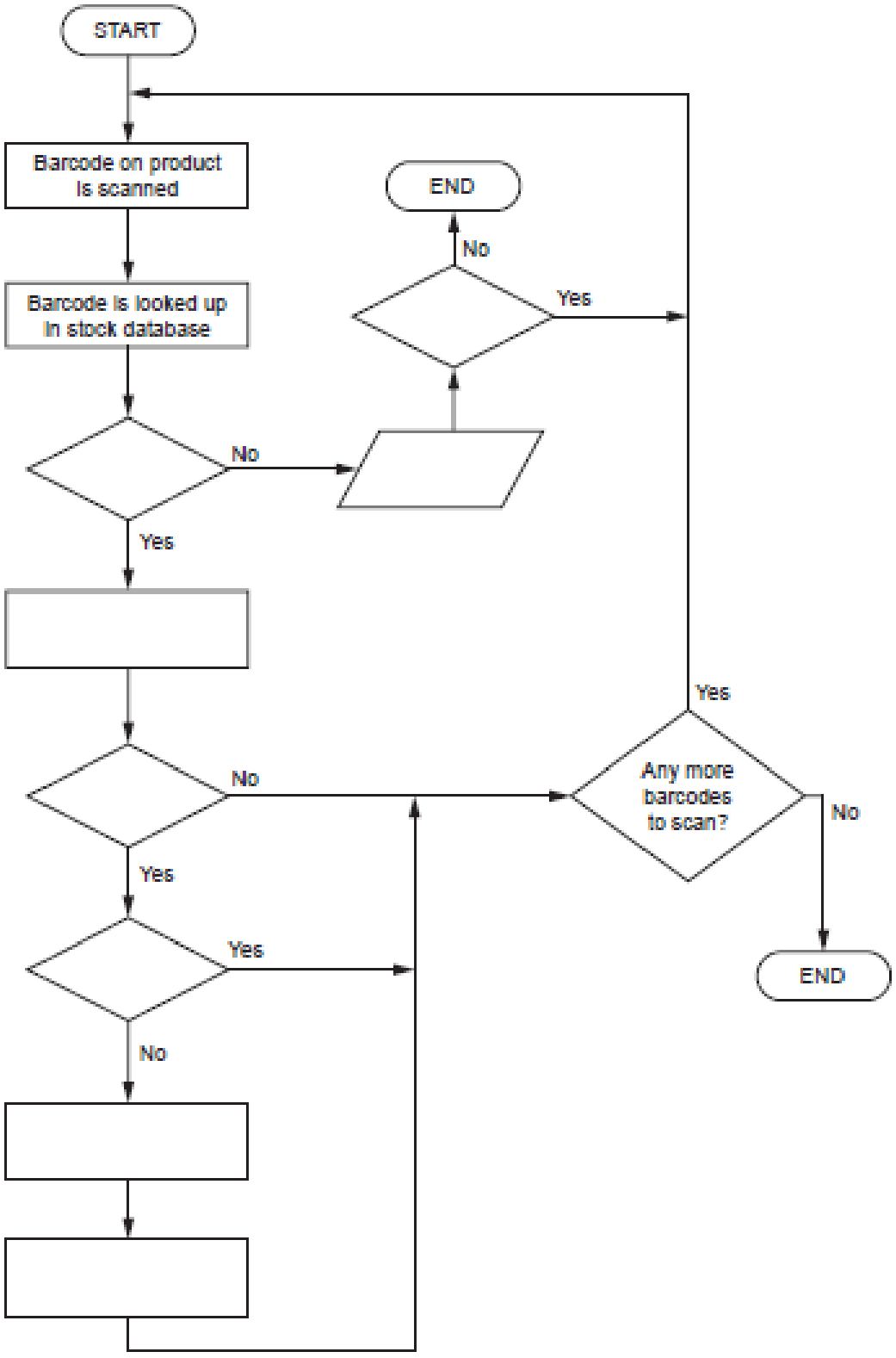
3 The flowchart on the opposite page shows what happens when the barcode on a product is scanned at the checkout in a supermarket. The barcodes are used in an automatic stock control system.

Several of the statements in the flowchart are missing.

Using **item number only** from the list below, complete the flowchart.

Item number	Statement
1	Add flag to product record to indicate re-order made
2	Any more barcodes to scan?
3	Has the scanned barcode been found in the file?
4	Has the re-order flag already been added to the product record?
5	Is number of product in stock <= re-order level?
6	Number of product in stock is reduced by 1
7	Output an error message
8	Automatically send out order for new product

Topic: 1.3.3 Input



[4]

Topic: 1.3.3 Input

5 A security system uses sensors, a camera and a microprocessor to capture images of each person entering a large shopping mall.
(a) Describe how the sensors, camera and microprocessor interact to identify certain people entering the mall. **[5]**

9 A remote-controlled model car contains RAM, ROM and a solid state drive. The car receives radio signals from its remote control. It can only receive radio signals of a certain frequency. The manufacturer sets this frequency and the owner cannot change it. The owner of the model car can input their own sequence of movements from an interface underneath the car.
(b) The owner needs to be able to enter their own sequence of movements for the model car. Name a suitable input device. **[2]**

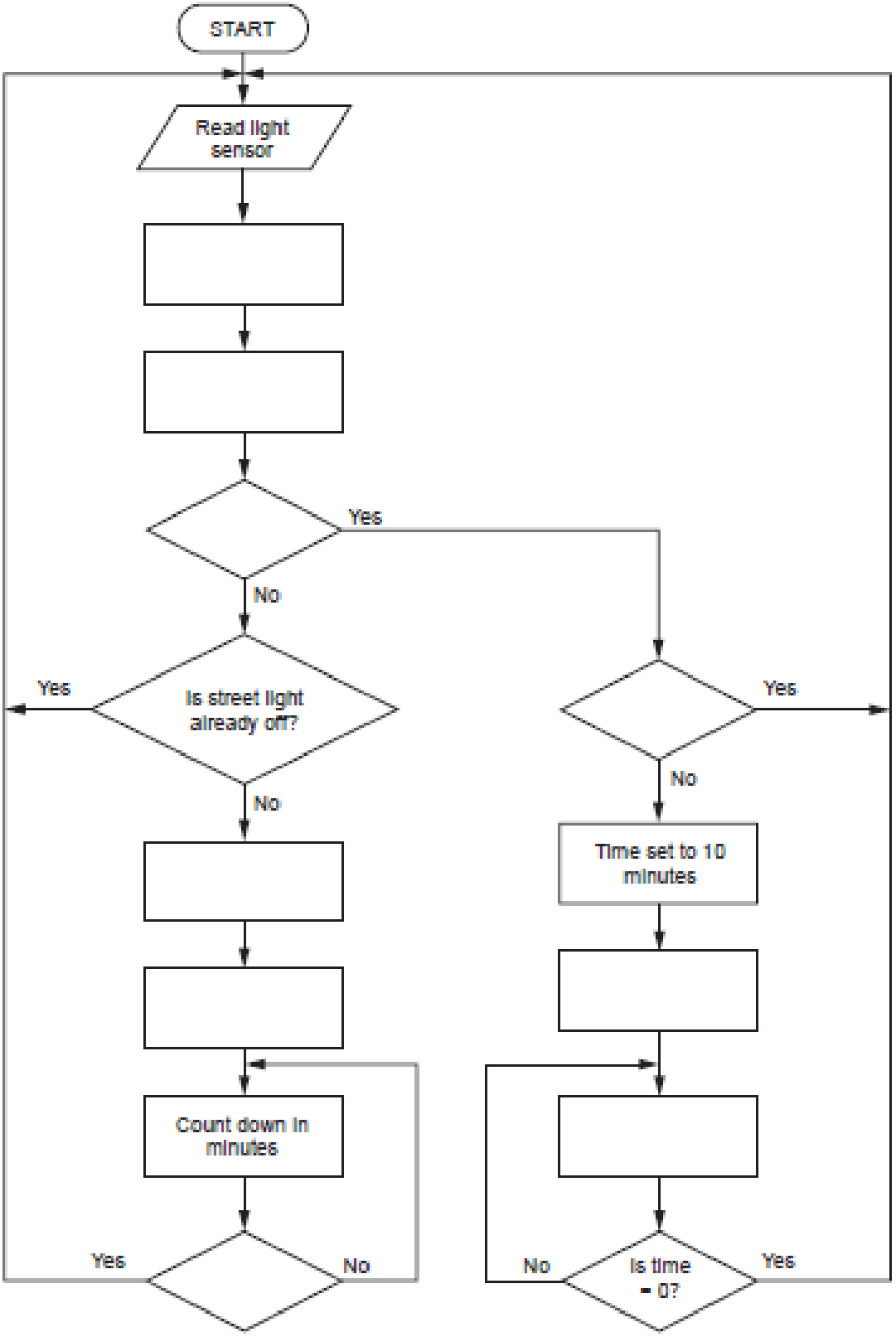
Oct/Nov 2015 P13(2210)

1 (a) Name an application which makes use of the following sensors. A different application should be used in each case. **[3]**

(b) The flowchart on the opposite page shows how a light sensor and microprocessor are used to switch a street lamp on or off. When the sensor reading is <= 50 light units, the lamp is turned on automatically.
Several of the instructions have been omitted from the flowchart.
Using **item numbers only** from the list below, complete the flowchart:

Item number	Instruction
1	Count down in minutes
2	Is light reading <= 50?
3	Is street lamp already on?
4	Is time = 0?
5	The microprocessor compares the sensor reading with stored values
6	The sensor reading is sent to the microprocessor
7	Switch the street lamp off
8	Switch street lamp on
9	Time set to 10 minutes

Topic: 1.3.3 Input



[5]

2 Sensors and a microprocessor monitor a car exhaust for high temperature and high carbon monoxide (CO) levels.
(a) Describe how the sensors and microprocessor are used to monitor the temperature and CO levels and warn the driver if either is out of range. **[5]**

6 Passengers fly into an airport from other countries. The airport has a security system that uses:

- computers
- scanners
- digital cameras

To gain entry to the country, each passenger must have a passport or identification (ID) card. This must contain a recent photograph and other personal data. The passenger must:

- place their passport or ID card on a scanner that reads machine-readable characters and scans the photograph
- look towards a camera that takes an image of the passenger's face

Describe how a computer checks whether the image just taken by the camera matches the scanned photograph. **[2]**

8 Four input devices are shown in the table below.
Give an application which makes use of each device and state a reason why the device is appropriate for that application.
Your application must be different in each case.

Input device	Application and reason
Light sensor	Application ..... Reason ....
Keyboard	Application ..... Reason ....
Barcode reader	Application ..... Reason ....
Touch screen	Application ..... Reason ....

[8]

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3 (a) Five sensors and five applications are shown below.

Draw a line to link each sensor to its most appropriate application.

Sensor	Application
Light sensor	Monitor the pollution levels in a river
Moisture sensor	Control the switching off and on of street lights

[4]

(b) Automatic doors in a building are controlled by the use of infrared sensors and a microprocessor.
Describe how the sensors and the microprocessor are used to automatically open a door as a person approaches. **[4]**

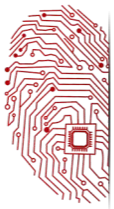
12 (a) Name the following type of barcode:

[1]

(b) The barcode in **part (a)** contains the denary value 2 6 4 0
Convert this value to hexadecimal.
Write the value as a 12-bit binary number.

[4]

(c) An airport uses the type of barcode shown in **part (a)** to advertise local places of interest.
Describe how a visitor landing at the airport could use these barcodes to help plan their visit. **[3]**



Topic: 1.3.3 Input

May/June 2016 P12 (2210)

2 Motion sensors are used in a security system to detect intruders.
Name **three** other sensors that could be used in the following applications.
Give a different type of sensor for each application.

Application	Sensor
controlling street lights	
monitoring a river for pollution	
controlling traffic lights	

[2]

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11 A security system is installed in a house. A hexadecimal number is entered to activate or deactivate the alarm.
(b) Identify **two** sensors that the security system could use to detect intruders.
Describe how each sensor could be used in the security system. **[6]**

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4 The Henslows Diner is a local restaurant.
(a) Staff currently use a keyboard to input a customer food order into a computer. The food order is then sent to the kitchen.
State **two** disadvantages of using a keyboard to input a customer food order. **[2]**
(b) A concept keyboard has a flat surface that is overlaid with images of food items available from the restaurant menu. Staff can click on an image to add the food item to a customer food order.
The Henslows Diner wants to change to a concept keyboard to input customer food orders.
Explain **two** benefits of making this change. **[4]**
9 A security light is controlled by sensors and a microprocessor.
Describe how the sensors and microprocessor interact to switch on the security light when an intruder is detected. **[6]**

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9 A supermarket has a system that allows customers to check out their own shopping.
Identify and describe the purpose of **two** input devices and **one** output device used in this system. **[6]**

12 The processes in a chemical factory are monitored by sensors connected to a microprocessor.
(a) Identify **two** different sensors used in this application. Give an example of how each sensor could be used in the chemical factor. **[4]**

(b) Describe how the sensors and a microprocessor are used to monitor a process. **[5]**

Topic: 1.3.3 Input

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6 Airline boarding passes can be read from a smartphone instead of a printout.

Identify what type of barcode **A** is an example of. Explain how the data stored in this type of barcode is read. **[4]**

9 A cold store is kept at a constant low temperature using a sensor, a microprocessor and a cooling unit.
Explain how the sensor and microprocessor will maintain a constant low temperature. **[6]**

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9 Anna has a farm that grows fruit.
She has a system that monitors the conditions for growing the fruit.
Sensors are used in this system.
(a) Explain what is meant by the term **sensor**. **[2]**

(b) State **two** sensors that could be used in this system and describe how they could be used. **[6]**

Topic: 1.3.3 Input

Oct/Nov 2017 P13(2210)

1 A washing machine has a small display screen built into it.
One use of the display screen is to show an error code when a problem has occurred with a washing cycle.
(a) State whether the display screen is an **input**, **output** or **storage device**. **[1]**

(d) Identify **three** sensors that could be used in the washing machine. **[6]**

6 Describe the operation of a 2D scanner and a 3D scanner. **[6]**

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8 A supermarket uses a barcode scanner to read the barcodes on its products.
(a) Describe how the barcode scanner reads the barcode. **[4]**

(b) Explain how the barcode system could help the supermarket manage its stock. **[3]**
(c) An infrared touch screen is used to view and navigate the supermarket stock system.
Explain how the infrared touch screen detects a user's touch. **[4]**

9 A business wants to use a biometric security system to control entry to the office.
The system will use a biometric device and a microprocessor.

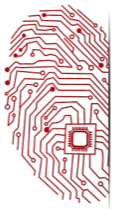
Explain how the biometric security system will make use of the biometric device and the microprocessor to control entry to the office. **[6]**

May/June 2018 P12 (2210)

9 An advertisement in a magazine displays this barcode:

(a) Identify this type of barcode. **[1]**

(b) Explain how the data stored in this barcode is read. **[4]**



Topic: 1.3.3 Input

10 Alexandra has a new mobile device.
It has a touch screen that uses capacitive technology.
(a) Describe how a capacitive touch screen registers Alexandra's touch. **[4]**

(b) Alexandra is wearing gloves because it is cold.
She presses an icon on her touch screen but her action is not registered.
(i) Explain why the touch screen will not register her touch. **[2]**

(ii) Alexandra does not want to remove her gloves.
Explain how Alexandra could use her mobile device whilst still wearing gloves. **[2]**

11 A factory uses a security system to control a security light. The system uses a sensor and a microprocessor.
Explain how the security system makes use of the sensor and the microprocessor to control the security light

[6]