

**YEAR: MAY/JUNE 2015**

**Q 1** The LCD (liquid crystal display) on the clock face is back-lit using blue LEDs (light emitting diodes). The brightness of the clock face is determined by the level of light in the room. The amount of light given out by the LEDs is controlled by a control circuit.

Describe how the sensor, microprocessor and LEDs are used to maintain the correct brightness of the clock face.

.....

.....

.....



.....

.....

.....

.....

.....


[3]

**Q 2** Modern LCD monitors and televisions use LED back-lit technology.

Give **two** advantages of using this new technology compared to the older cold cathode fluorescent lamp (CCFL) method.

1 .....

.....



2 .....

.....

.....

.....

[2]

**Q3** 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]

**Q4** Give **one** benefit and **one** drawback of your chosen technology when used on mobile phone touch screens.

Benefit

.....  
.....  
.....

Drawback

.....  
.....

[2]



**Q 5** 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]

**Q 6** 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]

**Q 7** 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]



**MAY/JUNE 2016**

**Q 8**

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
Gas sensor	Detect intruders breaking into a building
pH sensor	Monitor the amount of water left in clothes in a dryer
Pressure sensor	Monitor acidity levels in the soil in a greenhouse



[4]

**Q 9**

State **one** suitable application for **each** printer below. A different application must be given for each printer.

Inkjet printer .....

3D printer .....

[2]


**Q 10**

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]

**Q 11**

Name another type of printer and describe **one** way in which it is different from the printers named in **part (b)**.

Give an application for this printer.

Type of printer .....

Description .....

Application .....



[3]

Q 12 Name the following type of barcode:



.....[1] A  
G

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	



[3]



**Q 13** Six descriptions and six devices are shown below.

Draw a line to link each description to the correct device.

Description	Device
Allows a user to write on a surface using a pen; text and drawings are then captured electronically and stored for later use.	Digital Light Projector
Converts sound into an electrical signal/voltage.	Inkjet printer
Uses thermal bubble and piezoelectric technology to produce a hard copy.	Interactive whiteboard
Uses a bright white light source and micro mirrors (on a chip) to produce an image to be shone onto a wall or screen.	Laser printer
Converts a hard copy document into an electronic form to be stored as a file on a computer.	Microphone
Uses negatively charged images on a rotating drum and positively charged toner to output a hard copy.	Scanner (2D)





OCT/NOV 2016

Q 14 Identify **two** sensors that the security system could use to detect intruders.

Describe how each sensor could be used in the security system.

Sensor 1 .....

Description .....

.....

.....

.....

Sensor 2 .....

Description .....

.....

.....

.....

Q 15 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.

1 .....

.....

2 .....

.....

[2]



**Q 16** 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.

1 .....



2 .....

.....

**Q 17** Modern Liquid Crystal Display (LCD) monitors use Light-Emitting Diode (LED) backlit technology.

Give **four** benefits of using LED technology.

1 .....



2 .....

3 .....

4 .....

.....

[4]

Q 18

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.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



[O]

MAY/JUNE 2017

Q 19

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.

Input device 1 .....

Purpose .....

Input device 2 .....

Purpose .....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



Output device 1 .....

Purpose .....

.....



[6]

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 factory.

Sensor 1 .....

Use .....

.....

Sensor 2 .....

Use .....

.....



[4]

Describe how the sensors and a microprocessor are used to monitor a process.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



[5]

**Q 22** The diagram shows **five** output devices and **five** descriptions.

Draw a line between each output device and its description.

Output Device	Description
Inkjet printer	Flat panel display that uses the light modulating properties of liquid crystals.
LCD screen	Flat panel display that uses an array of light-emitting diodes as pixels.
2D cutter	Droplets of ink are propelled onto paper.
LED screen	Electrically charged powdered ink is transferred onto paper.
Laser printer	High powered laser that uses the x-y plane.

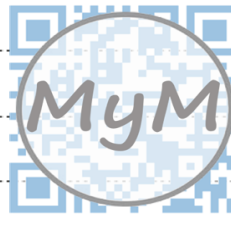
[4]

**Q 23** 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]

**Q 24** A cold store is kept at a constant temperature using a sensor, a microprocessor and a cooling unit.  
Explain how the sensor and microprocessor will maintain a constant low temperature.

.....  
.....



.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

[6]