

Q4. Give three reasons why pilots are trained using flight simulators rather than by flying real aircraft.

1

.....

2

.....

3

..... [3]

Q5. Microprocessors are used in different applications to control the process or to simply gather data (measurement only).

Tick which of the following applications are examples of control or of measurement only.

	Control	Measurement only
Automatic cookers		
Weather stations		
Microwave ovens		
Automatic washing machines		

Q6. Tick **three** advantages of using computers, rather than students, to control the growing conditions.

	✓
Computer readings are more accurate	
Students always forget to take readings	
Students might be unavailable to take readings during school holidays	
Computers can record data for later use	
Computers can analyse the results	
Computers can react to changes in the conditions immediately	

[3]

Q7. Describe **three** types of medical aid which can be produced using a 3D printer.

1

2

3

[3]

Q8. An electric bus system is being considered for New Delhi. Passengers will use smart cards to travel on the bus. They will have to add money to their smart card before they can travel.

Compare and contrast the use of smart cards rather than using cash to pay for a journey.

Q9. The new electric bus system will help to reduce the air pollution in the city. Sensors are used in the system.

Name a sensor that could be used to detect high levels of air pollution.

Q10. The sensor monitors the air pollution. When the air pollution reaches a certain limit, a message is displayed on a street sign in the city to warn pedestrians and road users.

Describe the computer processing involved in this system.

Q11. Data from the sensor needs to be converted from analogue to digital before it is processed.

Explain the need for this conversion.

Q12. A drone is a remote controlled flying vehicle. A drone is being used to monitor floods in Mumbai.

(a) Complete the following sentences, using the most appropriate word or words from the list below.

buzzer joystick monitor pressure sensor

ROM speaker temperature sensor video camera

(i) The drone is microprocessor controlled with input from a

(ii) Images of the floods are captured using a

(iii) The images sent from the drone are displayed on a

(b) Name three advantages of using a drone to monitor the floods rather than collecting the data manually.

Q13. In certain countries, the RFID chip in a passport is scanned when the passport is presented at an automated passport control gate.

(a) Give **three** items of information about the passport holder that are stored on the RFID chip.

(b) Describe how RFID technology reads the details from the chip.

(c) Explain why RFID technology is used for reading data from passports.

Q14. Many car parks are now fitted with CCTV that can read car number plates.

(a) Explain how number plate recognition systems work.

(b) Describe **two** problems that could occur when the system reads a number plate.