**HL Unit 7** **– Control**  
Quiz 3

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| **Question 1** | | | |
| Objectives: | 7.1.2, 7.1.3, 7.1.4, 7.1.6 | Exam Reference: | Nov-15 9 |

1. A control system is used to control sliding doors which automatically open to allow people in

and out of a shop.

1. (i) Identify one type of sensor in this system. [1]

*Award up to* ***[1 max]***.

Proximity;

Movement;

Pressure

(ii) Identify one piece of hardware, other than sensors, that is part of the control  
 system. [1]

*Award up to* ***[1 max]***.

Transducers;

AD converters;

Actuators;

Micro-processor;

(iii) With reference to the role of sensors, outline the sequence of steps within the  
 computer control system that will take place when a person approaches the door. [3]

*Award up to* ***[3 max]***.

When a person approaches, sensors activate;

Signal sent to processor;

Which sends signal to actuator/transducer (which opens doors);

After fixed time/no further sensory input, doors close;

1. (i) Define the term interrupt. [2]

*Award up to* ***[2 max]***.

Interrupt is a signal sent to the processor;

Sent by hardware or software;

Indicating an event that needs the processor’s immediate attention;

(ii) Describe a situation in this system where an interrupt would occur. [2]

If a second person approaches the door while it is closing;

This will interrupt the processing cycle and the door will re-open;

1. Discuss the contribution of computer control systems in industry where they replace

human workers. [6]

*Award* ***[1]*** *for an advantage/disadvantage and* ***[1]*** *for an expansion, for 3 examples, up to* ***[6 max]****.*

*Example discussion points:*

Labour cost;

Quality of work;

Retraining;

Redundancy;

Performance (of repetitive tasks);

Productivity;

Safety;

*Example answer:*

Initially a computer system is more expensive;

Once the computer control system is installed/set up it is more economical;

(Over longer period of time), than human labour;

Computers can work accurately;

7 days/24 hours;

Performing monotonous/unpleasant tasks without complaining;

In dangerous conditions (fumes, poison, lifting heavy weight, *etc*); **[**