HL Unit 7 – Control

Quiz 3

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.

   (a) (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;

   (b) (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;

(c) 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*); **[**