

Unit 18: Application of Computer Control

Student Name:

Teacher:

Date:

| Assessment Objective | Pass | Merit | Distinction |
|---|--|--|--|
| AO1 <i>Investigate applications of computer control and their effects</i> | Candidates state the objectives of at least one computer control system they have studied, in basic terms. They describe the use of at least two different sensors and the output device(s) that are controlled. They give a brief description of the operation of each system. They list at least two advantages of at least one system. | Candidates state the objectives of computer control system(s) they have studied, in detail. They describe the use of at least three different sensors and at least two different output devices that are controlled, and identify the type of controller used. They describe how each complete system operates. They describe the advantages and disadvantages of at least one system to at least two groups of people affected. | Candidates comprehensively state the objectives of computer control system(s) they have studied. They describe the use of at least four different sensors and at least two different output devices that are controlled, and identify the type of controller used. They explain why each system meets the needs of the user and give reasons why the specific items of hardware are appropriate. They describe how each complete system operates. They describe any limitations of at least one system. They describe the advantages and disadvantages of at least one system to all those affected. |
| AO1 NOTES | AO1: P M D | | |
| AO2 <i>Explain the role of feedback in control systems</i> | Candidates identify a system where feedback is used. They show a basic understanding of the continuous nature of feedback. | Candidates describe the way feedback is used in a system. They identify the input(s) and output(s) of the system and draw a diagram to show a feedback loop in the system. They show some understanding of the purpose of feedback in the system. | Candidates explain the way feedback is used in a system. They identify the input(s) and output(s) of the system and draw a diagram to show a feedback loop in the system. They explain the purpose of feedback in the system. |
| AO2 NOTES | AO2: P M D | | |
| AO3 <i>Create control programs using a series of commands</i> | Candidates create a program to control a real or virtual output device, eg a screen turtle, using a sequence of simple commands. Their program accurately carries out the tasks required. | Candidates create a program to control a real or virtual output device, eg a screen turtle, using a range of available commands. Their program accurately carries out the tasks required. They make appropriate use of at least one loop and call at least one procedure more than once from within their main program. They define and use at least one variable. They show some understanding of at least one way in which the use of loops, variables and/or procedures make programs more efficient. | Candidates create a program to control a real or virtual output device, eg a screen turtle, using a range of available commands. Their program accurately and efficiently carries out the tasks required. They make appropriate use of at least one loop and call at least one procedure more than once from within their main program. They define and use at least one variable. They pass at least one parameter into the program. They demonstrate an understanding of ways in which the use of loops, variables and procedures make programs more efficient |
| AO3 NOTES | AO3: P M D | | |

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|--|---|--|---|
| AO4 <i>Design a control system to meet a given brief</i> | Candidates state the purpose of a system. They identify at least one sensor and at least one output device. They identify locations for each device. Their choices will all be reasonable although there may be more effective solutions. They create a simple block diagram to show their chosen hardware components. | Candidates state the purpose of a more complex system. They describe at least two different types of sensor and at least two different types of output device, giving reasons for their choices. They choose, with reasons, whether it is appropriate to use a PC or PLC. They describe, with reasons, appropriate locations for each device. Their design will be an appropriate solution to the brief. They create a simple block diagram to show their chosen hardware components. | Candidates state the purpose of a more complex system. They describe at least two different types of sensor and at least two different types of output device. They choose whether it is appropriate to use a PC or PLC. They describe appropriate locations for each device. They justify their choice of devices and the locations chosen for each including why they have rejected other possibilities. Their design will be an appropriate solution to the brief. They create a simple block diagram to show their chosen hardware components |
| AO4 NOTES | AO4: P M D | | |
| AO5 <i>Construct a control system</i> | Candidates construct a virtual or physical model of the system they have designed. They write an appropriate program or programs using either flowchart or command line software. They print out their program(s). | Candidates construct a virtual or physical model of the system they have designed and describe how this was done. They write an appropriate program or programs using either flowchart or command line software. Their program will include the use of either a counted or conditional loop. They print out their program(s) and annotate their printout(s) to show the purpose of different procedures and/or sections of program. | Candidates construct a virtual or physical model of the system they have designed and describe how this was done. They write an appropriate and efficient program using either flowchart or command line software. Their program will include the use of both a counted and a conditional loop. They print out their program(s) and annotate their printout(s) to describe the purpose of different procedures and the main commands used. |
| AO5 NOTES | AO5: P M D | | |
| AO6 <i>Test a control system</i> | Candidates create a test plan including at least two tests of the system. They carry out the tests and provide evidence of the results. | Candidates create a test plan that tests each part of the system, identifying normal and abnormal conditions. They carry out the tests and provide evidence of the results. | Candidates create a test plan that thoroughly tests each part of the system, identifying normal, extreme and abnormal conditions. They carry out the tests and provide evidence of the results. |
| AO6 NOTES | AO6: P M D | | |
| AO7 <i>Evaluate a control system</i> | Candidates evaluate their system, giving advantages and at least one disadvantage or limitation of the system they have created. | Candidates give a thorough evaluation of their system, giving advantages, disadvantages and limitations of the system they have created. | Candidates give a thorough evaluation of their system, giving advantages, disadvantages and limitations of the system they have created. They suggest possible improvements |
| AO7 NOTES | AO7: P M D | | |
| AO8 <i>Describe the health and safety issues related to computer control</i> | Candidates identify at least one way in which an application of computer control aids health or safety. They describe at least one safety issue that must be considered when constructing a control system using electrical signals. | Candidates describe at least two ways in which applications of computer control aid health and/or safety. They describe at least one safety issue that must be considered when constructing a control system using electrical signals, including any issues that are appropriate to the system they construct | Candidates explain at least three ways in which applications of computer control aid health and safety. They explain at least two safety issues that must be considered when constructing a control system using electrical signals, including any issues that are appropriate to the system they construct. They give clear recommendations about the ways to avoid the potential problems they identify. |
| AO7 NOTES | AO8: P M D | | |

Overall grade awarded for this unit: **PASS** **MERIT** **DISTINCTION** (Circle ONE grade) Signature: _____