TOTAL MARK:	/ 70

Electronics task form

GCE A Level Electronics

Component 3 - Extended system design and realisation tasks

Centre Number:	**Centre Name:**
Candidate number:	**Candidate name:**

Task 1 Focus	Mark: / 20	Teacher's signature:
		Date:
Task 2 Focus	Mark: / 50	Teacher's signature:
		Date:

Notice to candidate
The work you submit for assessment must be your own.
If you copy from someone else, allow another candidate to copy from you, or if you cheat in any other way, you may be disqualified from at least the subject concerned.

Candidate declaration
I have read and understood the Notice to candidate (above). I have produced the attached work without assistance other than that which is acceptable within the specification. I have clearly referenced any sources and any AI tools used in the work. I understand that false declaration is a form of malpractice.

Candidate's signature:	Date:

Teacher declaration
I confirm that:

- Any assistance that goes beyond general guidance has been recorded and taken into account when marking the work.
- Otherwise apart from general guidance given within the parameters set out in the specification, the work was solely that of the candidate.
- The work was conducted under the conditions laid out by the specification.
- The candidate has clearly referenced any sources and any AI tools used in the work. I understand that false declaration is a form of malpractice.
- Signed candidate declarations for the entire cohort will be kept on file.

Teacher's signature:	Date:

Details of additional assistance given
Record here details of any assistance given which goes beyond general guidance and taken into account when the work is marked. (continue on separate sheet if necessary). You must indicate where you have taken into account the additional assistance provided via annotations.

Task 1: Microcontroller system (Assembler language program)

1. System Planning		Annotation code	Criteria awarded √ P X
3 marks	**The candidate has provided**: a3 a clear analysis of a problem and a design specification in both qualitative and quantitative terms (typically at least 3 of each), and including 2 or more detailed realistic measurable parameters with tolerances where applicable	Pa3	
2 marks	**The candidate has provided**: a2 an analysis of a problem and a design specification in both qualitative and quantitative terms (typically at least 2 of each), and including 1 or more realistic measurable parameters	Pa2	
1 mark	**The candidate has provided:** a1 an analysis of a problem and a partial design specification in either qualitative or quantitative terms (typically at least 4 in total)	Pa1	
0 marks	Response not creditworthy or not attempted.	P0	
		Mark awarded:	/ 3

2. System Development		Annotation code	Criteria awarded √ P X
6 - 8 marks	**The candidate has:** a3 produced a clearly annotated, logical flowchart to show the structure of the program and make predictions regarding its behaviour b3 devised an assembly language program that reacted to and used information from inputs to control outputs and utilised 5 or more port bits c3 used 10 or more different commands in the program including both conditional and unconditional branching commands d3 given a full account of assembling the program, fully recording the results of the testing for and removal of syntax error	Da3 Db3 Dc3 Dd3	
3 - 5 marks	**The candidate has:** a2 produced an annotated flowchart to show the structure of the program b2 devised an assembly language program that reacted to and used information from at least 1 input to control at least 1 output and utilised 4 or more port bits c2 used 7 or more different commands in the program including both conditional and unconditional branching commands d2 given an account of assembling the program, recording the results of the testing for and removal of syntax error	Da2 Db2 Dc2 Dd2	
1 - 2 marks	**The candidate has:** a1 produced a flowchart to show the structure of the program which was either incompletely annotated or lacked clarity b1 devised an assembly language program that utilised 3 or more port bits c1 used 4 or more different commands in the program including 1 or more branching commands d1 given a limited account of assembling the program, partially recording the results of the testing for and removal of syntax error	Da1 Db1 Dc1 Dd1	
0 marks	Response not creditworthy or not attempted.	D0	
		Mark awarded:	/ 8

3. System Realisation		Annotation code	Criteria awarded √ P X
5 - 6 marks	**The candidate has:** a3 produced an accurate circuit diagram and physical circuit layout which were very well organised and made wire connections to a very good standard with all wires arranged vertically/horizontally b3 downloaded the program to the microcontroller circuit and comprehensively tested the complete physical system prototype c3 provided a detailed analysis of the results for a system that worked consistently and reliably	Ra3 Rb3 Rc3	
3 - 4 marks	**The candidate has:** a2 produced an accurate circuit diagram and physical circuit layout which were fairly well organised and made wire connections to an acceptable standard with most wires arranged vertically / horizontally b2 downloaded the program to the microcontroller circuit and tested the complete physical system prototype c2 provided some relevant analysis of the results for a system that mainly worked	Ra2 Rb2 Rc2	
1 - 2 marks	**The candidate has:** a1 produced a circuit diagram and physical circuit layout which tended to be not very well organised or incomplete b1 downloaded the assembly language program to the microcontroller circuit and partially tested the complete physical system prototype c1 provided some superficial analysis of the results for a system that worked at some time	Ra1 Rb1 Rc1	
0 marks	Response not creditworthy or not attempted.	R0	
		Mark awarded:	/ 6

4. Evaluation		Annotation code	Criteria awarded √ P X
3 marks	**The candidate has:** a3 undertaken a critical and objective evaluation of the performance of the complete system which was valid, made comprehensive comparisons with the design specification and made at least 2 suggestions for improvement with explanations of how they improve the system	Ea3	
2 marks	**The candidate has:** a2 undertaken an objective evaluation of the performance of the complete system which was valid, made some comparisons with the design specification and made at least 2 suggestions for improvement	Ea2	
1 mark	**The candidate has:** a1 undertaken a simple evaluation of the performance of the complete system which was valid in few respects, made minimal comparison with the design specification and made at least 1 superficial suggestions for improvement	Ea1	
0 marks	Response not creditworthy or not attempted.	E0	
		Mark awarded:	/ 3

√ achieved **P** partly achieved **X** not achieved

Task 1 – Total mark:	
	20

Task 2: Electronic system

1. System Planning		Annotation code	Criteria awarded √ P X
5 - 6 marks	**The candidate has**: a3 identified a problem to be solved and provided detailed relevant research and analysis of the problem b3 produced a design specification in both qualitative and quantitative terms (typically at least 4 of each), and including 3 or more detailed realistic electronic parameters with tolerances where applicable	Pa3 Pb3	
3 - 4 marks	**The candidate has**: a2 identified a problem to be solved and provided some relevant research and analysis of the problem b2 produced a design specification in both qualitative and quantitative terms (typically at least 3 of each), and including 2 or more realistic electronic parameters	Pa2 Pb2	
1 -2 marks	**The candidate has:** a1 identified a problem to be solved and provided superficial research and analysis of the problem b1 produced a limited design specification in both qualitative and quantitative terms (typically at least 5 in total), and including 1 or more realistic electronic parameters	Pa1 Pb1	
0 marks	Response not creditworthy or not attempted.	P0	
		Mark awarded:	/ 6

2. System Development		Annotation code	Criteria awarded √ P X
13 - 18 marks	**The candidate has developed the system as a series of sub-systems and has:** a3 given a complete design specification and devised circuit details for 6 or more sub-systems including both analogue and digital sub-systems b3 considered alternative sub-system designs for 3 or more different sub-systems, made predictions regarding their behaviour and gave thorough reasons for final sub-system choice c3 presented accurate, high-quality fully labelled sub-system circuit diagrams d3 described test procedures and identified all of the test equipment for 6 or more different sub-systems e3 made and recorded all relevant numerical measurements for 6 or more different sub-systems f3 analysed the results for 6 or more different sub-systems and made comprehensive comparisons with the sub-system specifications	Da3 Db3 Dc3 Dd3 De3 Df3	
7 - 12 marks	**The candidate has developed the system as a series of sub-systems and has:** a2 given a design specification that was appropriate in most respects and devised circuit details for 4 or more different sub-systems including both analogue and digital sub-systems b2 considered alternative sub-system designs for 2 or more different sub-systems systems and given some valid reasons for final sub-system choice c2 presented accurate, good quality, labelled sub-system circuit diagrams d2 described test procedures and identified most of the test equipment for 4 or more different sub-systems e2 made and recorded most numerical measurements for 4 or more different sub-systems f2 analysed the results for 4 or more different sub-systems and made comparisons with the sub-system specifications in most cases	Da2 Db2 Dc2 Dd2 De2 Df2	
1 - 6 marks	**The candidate has developed the system as a series of sub-systems and has:** a1 given a design specification that was appropriate in some respects and devised circuit details for 2 or more sub-systems b1 considered alternative sub-system designs for 1 or more different sub-systems and given some mainly superficial reasons for final sub-system choice c1 presented sub-system circuit diagrams which were partially labelled or lacked clarity d1 described test procedures and identified some test equipment for 2 or more different sub-systems e1 made and recorded some of the measurements for 2 or more different sub-systems f1 analysed the results for 2 or more different sub-systems and made some comparisons with sub-system specifications	Da1 Db1 Dc1 Dd1 De1 Df1	
0 marks	Response not creditworthy or not attempted	D0	
		Mark awarded:	/ 18

3. System Realisation		Annotation code	Criteria awarded √ P X
14 - 20 marks	**The candidate has:** a3 produced accurate high-quality labelled block and circuit diagrams for the complete system and provided a complete component list b3 planned and produced a very well organised physical circuit layout with all wires arranged vertically/horizontally and showed a good awareness of risk assessment c3 arranged wires with no unnecessary crossing of components which were mounted to a high standard and showed a good awareness of safe working procedures d3 provided comprehensive evidence of planning test procedures for the complete physical system prototype and has identified appropriate equipment e3 made and clearly recorded all the relevant numerical measurements on the system parameters using standard scientific convention including a detailed analysis of the results f3 explained clearly how 2 or more sub-systems were interfaced together and explained how an interfacing issue was solved g3 produced an electronic system that worked consistently and reliably and included a comprehensive user guide	Ra3 Rb3 Rc3 Rd3 Re3 Rf3 Rg3	
7 - 13 marks	**The candidate has:** a2 produced accurate, good quality labelled block and circuit diagrams for the system and provided a partially completed component list b2 planned and produced a well organised physical circuit layout with most wires arranged vertically/horizontally and showed some awareness of risk assessment c2 arranged most wires with no unnecessary crossing of components which were mounted to a good standard and showed some awareness of safe working procedures d2 provided evidence of planning test procedures for the complete physical system prototype and has identified appropriate equipment in most cases e2 made and recorded the most relevant numerical measurements on the system parameters using standard scientific convention including some analysis of the results f2 explained how 2 or more sub-systems were interfaced together g2 produced an electronic system in which at least 5 different sub-system worked correctly most of the time and included a basic user guide for the system	Ra2 Rb2 Rc2 Rd2 Re2 Rf2 Rg2	
1 - 6 marks	**The candidate has:** a1 produced block and circuit diagrams for the system which were not completely labelled or lacked clarity b1 planned and produced a physical circuit layout, with little evidence of organisation or wires being arranged vertically/horizontally and showed superficial awareness of risk assessment/safe working procedures c1 wire connections made with some wires covering components or components not always mounted securely to the circuit board d1 provided some evidence of planning test procedures for the complete physical system prototype and has identified some appropriate equipment e1 made and recorded some relevant numerical measurements on the system parameters, with minimal analysis of the results f1 produced an electronic system in which at least 3 different sub- systems worked correctly at some time	Ra1 Rb1 Rc1 Rd1 Re1 Rf1	
0 marks	Response not creditworthy or not attempted	R0	
		Mark awarded:	/ 20

4. Evaluation (QER)		Annotation code	Criteria awarded √ P X
5 - 6 marks	**The candidate has:** a3 provided a coherent, succinct evaluation, using correct terminology of how the system works in terms of the function of each block and the signal transfer between blocks b3 undertaken a critical and objective evaluation of the performance of the complete system which was valid, made comprehensive comparisons with the design specification and made at least 3 thorough suggestions for improvement with explanations of how they improve the system *There is a sustained line of reasoning which is coherent, substantiated and logically structured. The information included in the response is relevant to the argument.*	Ea3 Eb3	
3 - 4 marks	**The candidate has:** a2 provided an evaluation, using some correct terminology of how the system works in terms of the function of each block, which was quite well structured and made some reference to the signal transfer between blocks b2 undertaken an objective evaluation of the performance of the complete system which was valid, made some comparisons with the design specification and made at least 3 suggestions for improvement *There is a line of reasoning which is partially coherent, supported by some evidence and with some structure. Mainly relevant information is included in the response but there may be some minor errors or the inclusion of some information not relevant to the argument.*	Ea2 Eb2	
1 - 2 marks	**The candidate has:** a1 provided an evaluation of how the system works in terms of the function of each block, in which some of the content may be ambiguous or disorganised b1 undertaken a simple evaluation of the performance of the complete system which was valid in few respects, made minimal comparisons with the design specification and made at least 2 superficial suggestions for improvement *There is a basic line of reasoning which is not coherent, supported by limited evidence and with very little structure. There may be significant errors or the inclusion of information not relevant to the argument.*	Ea1 Eb1	
0 marks	Response not creditworthy or not attempted	E0	
		Mark awarded:	/ 6

√ achieved **P** partly achieved **X** not achieved

Task 2 – Total mark:	
	50