

**PRINCIPAL LEARNING LEVEL 2  
ENGINEERING**

Unit 5: Construct Electronic and Electrical Systems  
Work Book

**F552**

**JANUARY 2010**

**Duration:** 6 hours in three 2 hour sessions

**OCR Supplied Materials:**  
None

**Other Materials Required:**

- Electronics components and equipment



Candidate Forename		Candidate Surname	
--------------------	--	-------------------	--

Centre Number						Candidate Number				
---------------	--	--	--	--	--	------------------	--	--	--	--

Date of Challenge

Session 1

Session 3

Session 2

**INSTRUCTIONS TO CANDIDATES**

Please clearly write below

**Design Challenge:**

- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above and on page 6.
- Complete **all** Tasks in this Work Book.

**INFORMATION FOR CANDIDATES**

- The total number of marks for this paper is **30**.
- This document consists of **12** pages. Any blank pages are indicated.

**INSTRUCTIONS TO CENTRES**

- It is essential that Centres follow the instructions printed in the Information for Presenters Booklet for the conduct for running this Design Challenge.
- The activity is designed to take place in a design room, studio or workshop (not the Centre's examination room/hall).

For Examiner's Use Only			
		Centre Mark	Mod Mark
Task 1	6		
Task 2	6		
Task 3	12		
Task 4	6		
<b>TOTAL</b>	<b>30</b>		



Session 1	Tasks 1 and 2	2 hours
<b>Task 1</b> In response to your 'Design Challenge' apply your knowledge of electronic and electrical principles to design possible solutions.		

Task 1 (continued) In the table below describe and justify safe working procedures that are appropriate to your selected circuit designs.

	Safe Working Procedures
Tools	
Equipment	
Manufacturing Processes	

Total 6 Marks	Centre Mark	Mod Mark

Task 2 Justify your selection of appropriate components required to construct your circuits.		
Components considered	Operating Principles	Calculations

	Centre Number	
Task 2 (continued)	Candidate Name	
Initial Circuit Diagram	Candidate Number	

Total 6 Marks	Centre Mark	Mod Mark

Session 2	Task 3 Part 1	2 hours
<b>Task 3</b> From your circuit diagram construct a prototype using at least two of the following techniques: soldering, stripboards, protoboards, breadboards, CAD.		
Circuit Diagram	Photographs of Prototype Circuits	
	Photograph 1	
	Photograph 2	
	Photograph 3	

Session 3	Task 3 Part 2	1 hour
NB. Candidates are permitted to produce a circuit board between Session 2 and 3.		
Task 3 (continued) Construct your final circuit		
Final Circuit Diagram Additional photographs can be attached to page 10		
Photographs of completed final solution		
Photograph 1 (component side)	Photograph 2 (track/connection side)	

Total 12 Marks	Centre Mark	Mod Mark



Session 3	Task 4	1 hour
Task 4 Identify and justify appropriate testing, test equipment and fault finding methods and use them to test your circuit.		
Testing Method (photographic evidence acceptable)	Justification	Outcome
Test Method 1		
Test Method 2		

Suggest modifications and use calculations to justify these

Total 6 Marks	Centre Mark	Mod Mark

Additional photographs and other supporting material:

**Copyright Information**

OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations, is given to all schools that receive assessment material and is freely available to download from our public website ([www.ocr.org.uk](http://www.ocr.org.uk)) after the live examination series.

If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material, OCR will be happy to correct its mistake at the earliest possible opportunity.

For queries or further information please contact the Copyright Team, First Floor, 9 Hills Road, Cambridge CB2 1GE.

OCR is part of the Cambridge Assessment Group; Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.