

**Published Mark Scheme for
GCSE Technology and Design**

Summer 2010

**NORTHERN IRELAND GENERAL CERTIFICATE OF SECONDARY EDUCATION (GCSE)
AND NORTHERN IRELAND GENERAL CERTIFICATE OF EDUCATION (GCE)**

MARK SCHEMES (2010)

Foreword

Introduction

Mark Schemes are published to assist teachers and students in their preparation for examinations. Through the mark schemes teachers and students will be able to see what examiners are looking for in response to questions and exactly where the marks have been awarded. The publishing of the mark schemes may help to show that examiners are not concerned about finding out what a student does not know but rather with rewarding students for what they do know.

The Purpose of Mark Schemes

Examination papers are set and revised by teams of examiners and revisers appointed by the Council. The teams of examiners and revisers include experienced teachers who are familiar with the level and standards expected of 16- and 18-year-old students in schools and colleges. The job of the examiners is to set the questions and the mark schemes; and the job of the revisers is to review the questions and mark schemes commenting on a large range of issues about which they must be satisfied before the question papers and mark schemes are finalised.

The questions and the mark schemes are developed in association with each other so that the issues of differentiation and positive achievement can be addressed right from the start. Mark schemes therefore are regarded as a part of an integral process which begins with the setting of questions and ends with the marking of the examination.

The main purpose of the mark scheme is to provide a uniform basis for the marking process so that all the markers are following exactly the same instructions and making the same judgements in so far as this is possible. Before marking begins a standardising meeting is held where all the markers are briefed using the mark scheme and samples of the students' work in the form of scripts. Consideration is also given at this stage to any comments on the operational papers received from teachers and their organisations. During this meeting, and up to and including the end of the marking, there is provision for amendments to be made to the mark scheme. What is published represents this final form of the mark scheme.

It is important to recognise that in some cases there may well be other correct responses which are equally acceptable to those published: the mark scheme can only cover those responses which emerged in the examination. There may also be instances where certain judgements may have to be left to the experience of the examiner, for example, where there is no absolute correct response – all teachers will be familiar with making such judgements.

The Council hopes that the mark schemes will be viewed and used in a constructive way as a further support to the teaching and learning processes.

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New
Specification



Rewarding Learning

**General Certificate of Secondary Education
2010**

Technology and Design

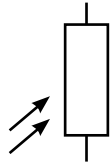
Unit 1: Technology and Design Core

[GTD11]

WEDNESDAY 26 MAY, AFTERNOON

**MARK
SCHEME**

1



[1]

Electronic [1]

Lever [1]

Corrosive [1]

Pneumatic [1]

Single Acting Cylinder (SAC) [1]

Electronic [1]

Diode [1]

Mechanical [1]

[9]

9

2

(a) Computer Aided Design [1]

Computer Aided Manufacture [1]

Computer Numerical Control [1]

[3]

(b) To test a design before it is made to save time and material.

or checks whether or not the design can be manufactured successfully.

or to test CNC programme.

[3]

6

3

(a) (i) Vee [1]

(ii) Rotary [1]

Linear [1]

[3]

(b) Motor pulley [1]

Driven Pulley [1]

[2]

5

4

(a) 1. Portrait or landscape [1]

2. Wall mounted or free standing

or size of photographs etc. [1]

[2]

(b) Adhesive or other suitable response

[1]

(c) 1. Easier to manufacture [1]

2. Use less material

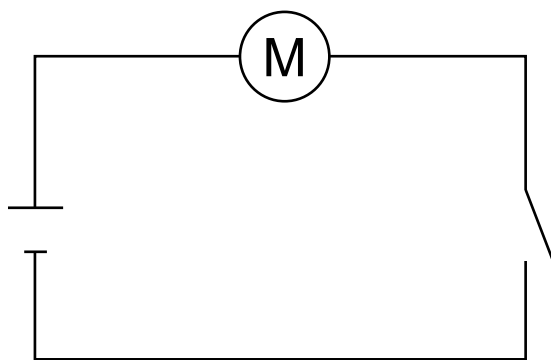
or less costly etc. [1]

[2]

5

- 5 (a) (i) A = Motor
 B = Toggle Switch/SPST
 C = Battery [3]
- (ii) The motor or Component A [1]
- (iii) By the operation of the Toggle switch [1]

(b)



3 × [1] for each symbol
 [2] for complete circuit [5]

10

- 6 (a) Check for loose connections/fix components securely
 or keep hands clear of moving parts etc. one off [1]
- (b) D
 B
 C
 A [4]
- (c) (i) By operating valve A or valve B [1]
- (ii) To control the speed of stamping [2] [3]

8

7	(a) (i)	Medium Density Fibreboard [1]			
		(ii)	Chipboard [1]	[2]	
	(b)		Coping saw	[1]	
	(c)		Hold the wood in a wood vice and then use either glass paper; surform; rasp; spoke; shave; etc.	[2]	
	(d) (i)		Non toxic paint; emulsion paint; gloss paint	[1]	
		(ii)	Good appearance; adds colour; protects surface	[1]	7
8	(a) (i)	Potential Divider Circuit/Voltage Divider Circuit	[2]		
		(ii)	4.5V	[2]	
		(iii)	Brown/Black/Orange	[3]	
	(b)		$V_2 = \frac{R_2}{R_1 + R_2} \times V_T$		
			$V_2 = (10/6 + 10) \times 9$		
			$V_2 = 5.625$	[3]	10

9 (a) (i) & (ii) Any **two** from:

- Converts a small signal to a larger one;
- protects the computer from possible faults;
- connects components to/from the computer as either an input or output;

[2]

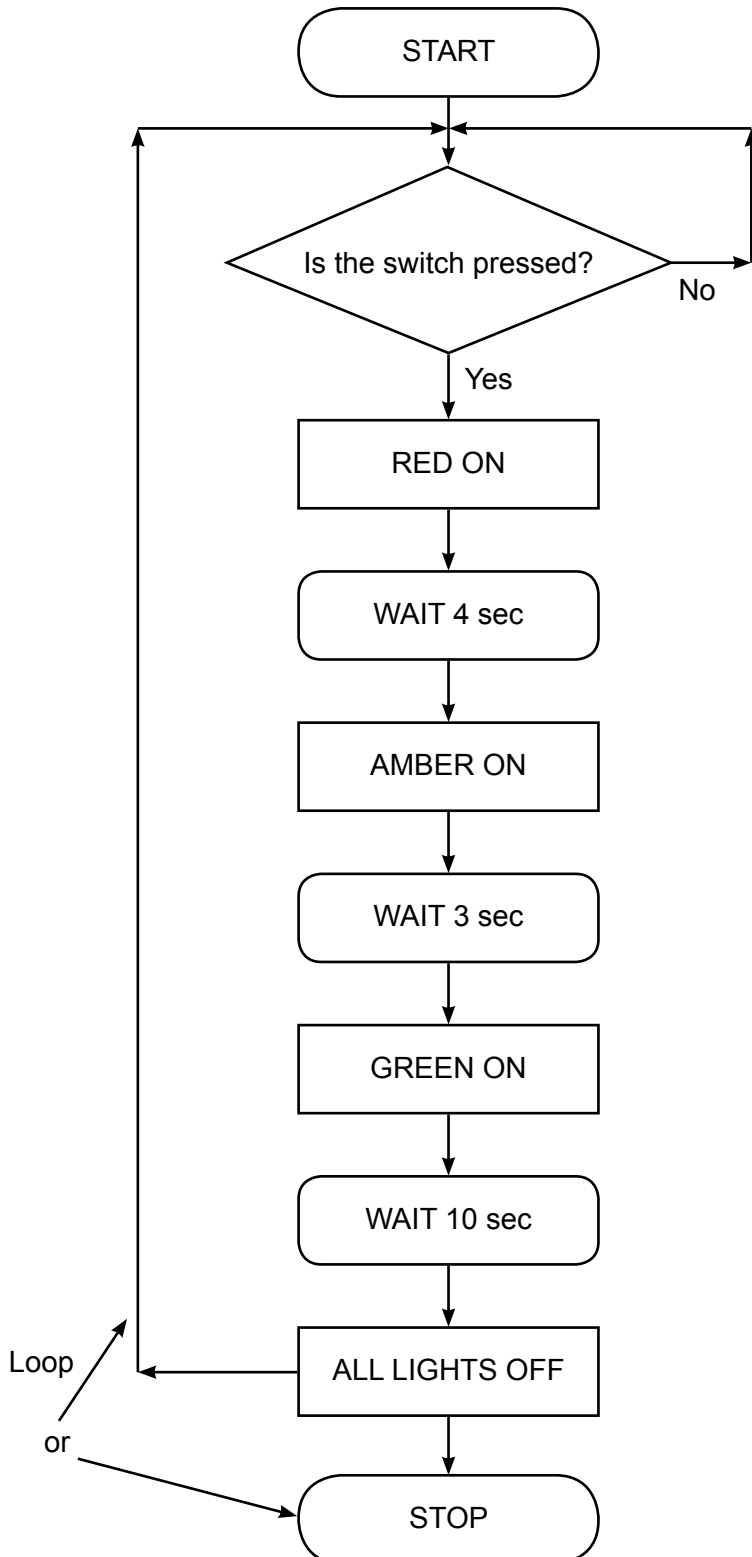
(b) See flow chart below

[9]

(c) INPUT: Switch

[1]

12



			AVAILABLE MARKS
10	<p>(a) Metal Steel Reason Strength or hardness or durability etc.</p>	[2]	
	<p>(b) 1. Marking out 2. Cutting/Sawing/Shaping 3. Filing or finishing etc.</p>	[3]	
	<p>(c) Welding/brazing</p>	[1]	
	<p>(d) To increase the turning effect or a similar explanation</p>	[2]	8
11	<p>Indicative Content:</p> <ul style="list-style-type: none"> • Prepare all edges of acrylic before bending • Turn on heater to allow it to warm up. • Remove the protecting paper. • Mark the place to be bent with felt tip pen. • Heat the bend line until the material gives easily when you try to bend it. • Quickly place acrylic into jig and bend it. • Hold the acrylic until it cools. <p>Safety precautions:</p> <ul style="list-style-type: none"> • Use heat resistant gloves. • Check settings on the strip heater. • Wear goggles. • One operator at a time. 	[10]	10

Response Type	Description	Mark Band
Limited	Students correctly identify very few steps in the line bending process and no safety precautions. The level of accuracy of spelling, punctuation and grammar is limited in most cases. Form and style is generally inappropriate as is the use of specialist terms.	[1]–[4]
Satisfactory	Students correctly identify some of the steps in the line bending process and some of the safety precautions. The level of accuracy of spelling, punctuation, and grammar is satisfactory in most situations. The form and style is satisfactory in most cases and specialist terms are used appropriately in some cases.	[5]–[7]
Very Good	Students correctly identify the majority of steps in the line bending process and the majority of safety precautions. The level of accuracy of spelling, punctuation, grammar is very good. The form and style is of a high standard and specialist terms are used appropriately at all times.	[8]–[10]

When a response is not worthy of credit then a **[0]** mark should be awarded.

Total

90

