

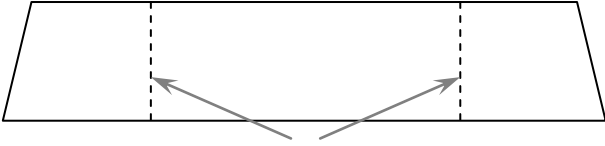
**Annual Examinations for Secondary Schools 2014**

**FORM 3 (3<sup>rd</sup> YR)                      DESIGN & TECHNOLOGY                      MARKING SCHEME**


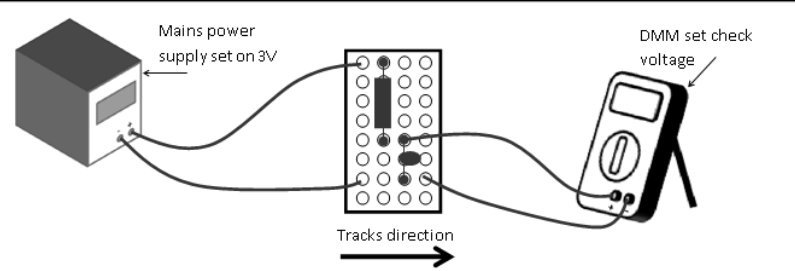
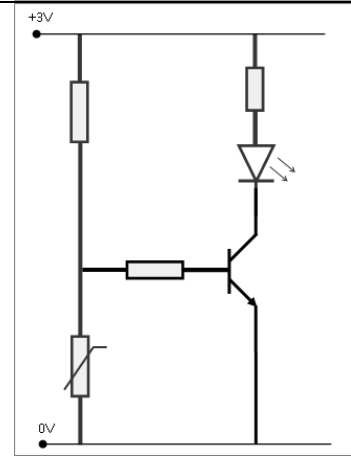
SECTION A: DESIGN			
QUESTION NUMBER	ANSWER	MARKS ALLOTTED	
1	a	Possible answers: (i) Design and make a souvenir. (ii) Design and make a souvenir to be distributed after a run, a walk, and a cycle. (iii) Design and make a souvenir to be distributed on the Association for Athletes 50 <sup>th</sup> anniversary run, walk, and cycle. <i>Full marks should be given if answers similar to (iii) are given. Answers as (ii) should be awarded 1 mark. Answers as (i) should not be considered.</i>	2
	b	Any TWO of the following: souvenir, 50 <sup>th</sup> anniversary, run/walk/cycle, athletes, textiles/resistant materials	$\frac{1}{2} \times 2 = 1$
2	a	Items should match the given design brief, for example: trophy, keychain, drawstring bag, head/wrist sweatband <i>(Students should name two products)</i>	$\frac{1}{2} \times 2 = 1$
	b	Questions should match the given design brief, for example: – How much does the item cost? – What material is it made of? – What types of stitches/joints have been used? – What are its major dimensions? – Is the product made from materials that can be recycled? <i>(Students should give three questions)</i>	$1 \times 3 = 3$
3		The specifications give a brief description of how the product should function / how it should look like.	2
4		<i>Marks should be awarded as follows:</i> <i>1 mark for originality,</i> <i>1 mark for clarity of idea,</i> <i>1 mark for colour,</i> <i>1 mark for materials,</i> <i>1 mark for finish and decorations.</i>	5
5		Ideas should be compared to the specifications and the one that best meets the specifications should be chosen.	2
6	a	Batch production should be used because: – Quite an amount is needed for a particular event. – The event will only happen once so demand is not continuous. <i>1 mark for method of production</i> <i>1 mark for each reason</i>	3

	b	Items mentioned should be related to the anniversary of the association, for example: A trophy for the winner, a banner to be hung at start/finish line.	$\frac{1}{2} \times 2 = 1$
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**SECTION B: RESISTANT MATERIALS**

QUESTION NUMBER		ANSWER	MARKS ALLOTTED	
7	a	A thermal insulator is a material which does not conduct heat.	1	
	b	Any TWO of the following: plastics, wood, ceramics, stone	$1 \times 2 = 2$	
8	a	 <p style="text-align: center;">Bending lines</p> <p><i>1 mark for correct shape</i> <i>1 mark for bending lines</i></p>	2	
	b	i	line bending machine/hot wire bender	1
		ii	A flat plastic sheet is placed on a heated wire. Once the plastic softens, the sheet is bent and left to cool at the desired angle.	2
9	a	Students should show a bolt and nut joining two or more layers of material. <i>1 mark for correct drawing</i> <i>1 mark for correct labelling</i>	2	
	b	Any TWO of the following or other relevant answers: – Clamp material while drilling – Use safety spectacles – Keep hands away from drilling area – Use appropriate drilling bit	$1 \times 2 = 2$	
	c	Ferrous: A metal which contains iron. Examples: cast iron, mild steel, stainless steel, etc. ( <i>Students should give one example</i> ) Alloy: A metal which is made up of a combination of other metals. Examples: brass, bronze, stainless steel, etc. ( <i>Students should give one example</i> )	$1 \times 4 = 4$	
	d	Any ONE of the following or other relevant answer: screws, pop-rivets, adhesive, etc.	1	
10		There are several possible answers, such as: – Using adhesive with a combination of supporting brackets; – Screwing the plastic sheet to the sides of the base. <i>2 marks for joining method</i> <i>1 mark for labelling</i>	3	

SECTION C: ELECTRONICS

QUESTION NUMBER		ANSWER	MARKS ALLOTTED	
11	a	False	$\frac{1}{2} \times 6 = 3$	
	b	False		
	c	True		
	d	False		
	e	True		
	f	False		
12	a	block diagram	1	
	b		1	
	c	i	Because once the main switch is pressed, it needs to remain in that state until it is pressed again.	1
		ii	Because the safety switch needs to be continuously pressed to signal that the flap is closed.	1
13	a	thermistor	1	
	b	V out increases when the temperature rises because the thermistor resistance increases when temperature rises.	2	
	c	$V_{out} = V_{in} \times \frac{R_2}{R_1 + R_2}$ $V_{out} = 3 \times \frac{9000000}{1000000 + 9000000}$ $V_{out} = 2.7V$	2	
	d i, ii, iii		$1 \times 3 = 3$	
14	a, b		$1 \times 2 = 2$	

15	a, b		$1 \times 2 = 2$			
	c	<table border="1"> <tr> <td>i</td> <td>amplify</td> </tr> <tr> <td>ii</td> <td>NPN</td> </tr> </table>	i	amplify	ii	NPN
i	amplify					
ii	NPN					

**SECTION D: FOOD**

QUESTION NUMBER	ANSWER		MARKS ALLOTTED
16	a	water-soluble	$1 \times 5 = 5$
	b	calcium	
	c	carbohydrates	
	d	$0^{\circ}\text{C}$ and $5^{\circ}\text{C}$	
	e	use by	
17	a	conduction, convection, radiation	$1 \times 3 = 3$
	b	<p>Any TWO from the following or other relevant answers:</p> <ul style="list-style-type: none"> <li>– to make it more attractive, tastier and easier to eat</li> <li>– to make it safer to eat as harmful bacteria are killed if heated to high temperature</li> <li>– to keep food longer because yeasts, moulds and bacteria are destroyed by heating</li> <li>– to improve the flavour by combining different food</li> </ul>	$1 \times 2 = 2$
18	a	True	$\frac{1}{2} \times 8 = 4$
	b	False	
	c	False	
	d	True	
	e	True	
	f	True	
	g	True	
	h	False	
19	<p>For benefits: Any TWO of the following or other relevant answers:</p> <ul style="list-style-type: none"> <li>– crops resistant to pests or viruses</li> <li>– crops ripen slowly, increasing the shelf life of the food</li> <li>– more food is produced to cater for the increasing demand</li> <li>– nutrition of the product is increased</li> </ul> <p>For disadvantages: Any ONE of the following or other relevant answers:</p> <ul style="list-style-type: none"> <li>– long term health risks</li> <li>– environmental effects</li> </ul>		$2 \times 3 = 6$

## SECTION E: TEXTILES

QUESTION NUMBER		ANSWER	MARKS ALLOTTED
20	a	Any TWO of the following or other relevant answers: – they are stretchable – they fit the body well – they may act as insulators	$1 \times 2 = 2$
	b	Any TWO of the following or other relevant answers: – absorb moisture – wear well – easy to wash	$1 \times 2 = 2$
21	a	Any TWO of the following or other relevant answers: – Keep machine away from water – Switch off the machine when not in use – Check cables and plug for any damage – Do not overload electricity sockets – See that machine carries EU safety standards labels	$1 \times 2 = 2$
	b	Any TWO of the following or other relevant answers: – Make sure dyes are used and stored safely – Wear an apron to protect clothing – Wear gloves to protect your skin – Rinse and clean the fabric well when finished to avoid contamination	$1 \times 2 = 2$
22	a	Any TWO of the following: – washing instructions – drying instructions – dry cleaning method – level of heat for ironing – bleaching information	$1 \times 2 = 2$
	b	Symbols make it possible for every person to understand the instructions clearly no matter what language s/he knows.	2
23		<i>Award 1 mark for each of the following:</i> - <i>Clarity of sketch</i> - <i>Labelling/Annotations</i> - <i>Use of colour</i> - <i>Neatness</i>	4
24		Any TWO of the following: – to provide a good quality and neater finish – to prevent fabric from fraying – to create a decorative edge	$1 \times 2 = 2$
25		Any TWO of the following: – to remove crease from fabrics – to press seams open to give a good quality finish – to press a hem in place – to attach an iron-on interfacing – to remove wax from a piece of batik work – to press a turning in place ready for machining	$1 \times 2 = 2$