

SHERBORNE

DESIGN & TECHNOLOGY PAPER

INSTRUCTIONS

- ANSWER ALL OF THE QUESTIONS IN THIS BOOKLET
- WRITE YOUR NAME AND CURRENT SCHOOL BELOW
- MARKS WILL BE AWARDED FOR THE CLARITY AND THE PRESENTATION OF YOUR WORK
- Paper duration: 60 minutes

Question total	Marks awarded
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24

10

8

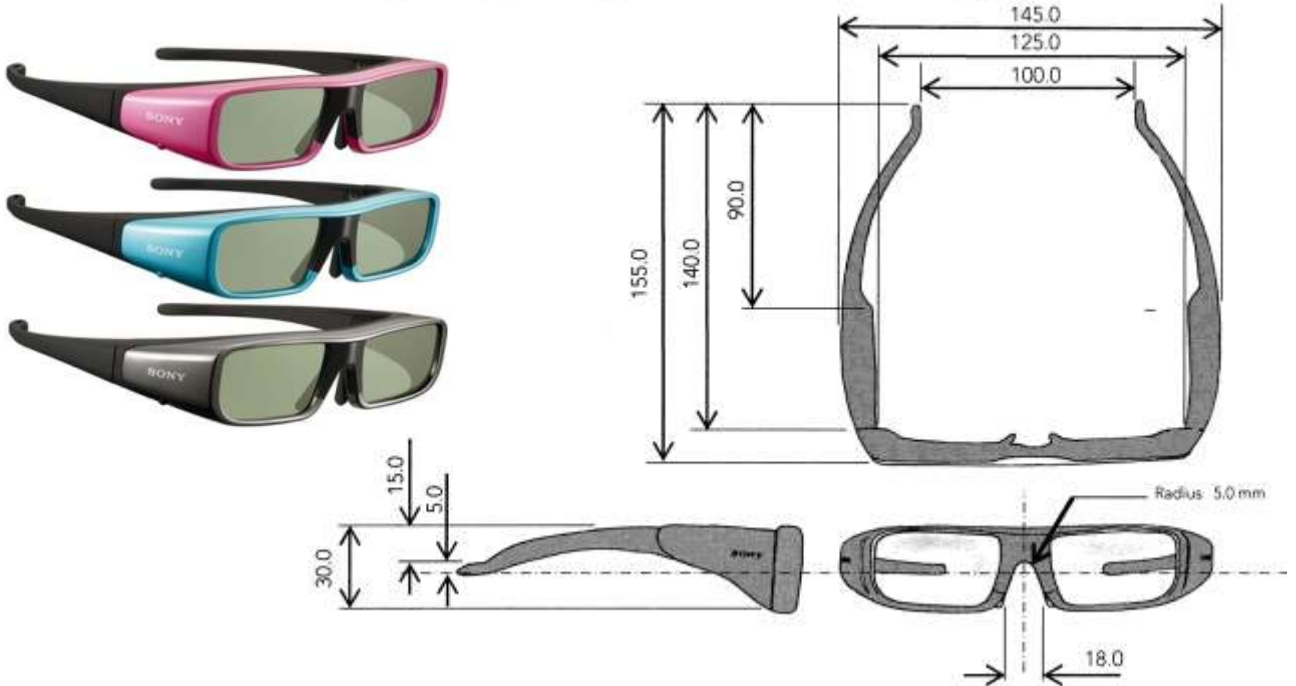
42

2011

Your name : Your current school :

Please read carefully and then answer all the questions

A local youth club has just brought a new Sony 3D television to watch football matches on. The 3D effect requires users to wear Sony's 3D glasses. The youth club has ordered several sets of the three glasses but now needs a rack to keep them together. The youth club has asked a Design and Technology department to help develop a storage rack for their sets of three glasses.



The D&T department has been asked to make a **durable** and **good looking** rack to hold the **three pairs of glasses**. The pupils conduct some **initial research** to establish the **dimensions** for the glasses. The dimensions are indicated above [all dimensions are in millimetres].

As a class exercise, pupils were asked to write some **specifications** on the theme of 'glasses storage'. The class came up with the following:

- *It must be easy to see when a pair are missing. The reason is so that a full set can be maintained with a minimum amount of time and effort for the staff.*
- *The rack should store the glasses without scratching the lenses. The reason is due to the fact that the glasses are expensive and the club would not want to replace glasses that were scratched by a rack.*

i) In the space provided write out 2 of your own specifications for the glasses storage device. Remember to give a reason in each of your specifications.

Your specifications:

a)

.....

Reason

.....

b)

.....

Reason

.....

1ii). The School have chosen you to draw some design proposals for the 'glasses rack'.
Use words and arrows to annotate your sketches.

Point out the following:

- **Where** and **how** the design **meets the 4 specifications** from question 1.
- The **materials** used and what makes them suitable
- Any **special features** or functions of the design

Draw your **first design idea** here: (one idea only with sketches of details if necessary)

A good, functional design	[2]
The design meets the 4 specifications from question 1	[4]
The clarity and quality of drawing	[2]
Clarity and relevance of annotation	[2]

(continued overleaf)

1iii)

Draw your second design idea

Your second idea should offer an **alternative design** which still meets the 4 specifications from question 1.

TOP TIP : *It may help you to come up with a different solution if you think about using **different materials** for the glasses rack .*

A good, functional design	[2]
The design meets the 4 specifications from question 1	[4]
The clarity and quality of drawing	[2]
Clarity and relevance of annotation	[2]

Question total 24 marks

2 In 2008 a former chairman of 'Shell Oil' was quoted as saying:

'It is pretty clear that there is not much chance of finding any significant quantity of new cheap oil. Any new or unconventional oil is going to be expensive.'

Crude oil has been used for over 150 year to 'fuel' the development of our society as we know it. Crude oil is a finite resource which means it cannot go on for ever. The oil extraction industry now recognises that we have reached 'Peak oil' production. This means that from now on global oil extraction is likely to decline due to:

- the difficulty and expense of extracting new oil,
- the rise in cost of oil
- reducing demand for this increasingly expensive fuel creating a demand for alternative ways of doing what we have done with oil in the past.



In the late 1980's global meetings took place in order to discuss concerns about the unsustainable way in which we are using the Earth's resources. At these meetings the World's nations agreed that we should move towards 'Sustainable Development'. They defined Sustainable Development as:

"(Using global resources in a way that...) meets the needs of the present without compromise the ability of future generations to meet their own needs."



If designers develop products for manufacture then designers ought to consider the sustainability of the materials and processes in the manufacture of the products they design.

The 3Rs Waste Hierarchy is now becoming an important aspect of successful sustainable design. The three Rs stand for **REDUCE, REUSE & RECYCLE**. These are arranged in this order as one 'R' is considered to be more important than another 'R'. When lists are arranged in this way the list describes a hierarchy.

i) **Recycling** comes at the bottom of the waste hierarchy. Can you explain why the **reuse** and **reduction** of waste are considered more important than **recycling**?

.....

.....

.....

.....

.....

.....

.....

(There is more space for you to continue your answer overleaf...)

.....
.....
.....
..... [4]

ii) Explain **three** benefits to the environment of **Recycling** household waste.

- a)
 - b)
 - c)
- [3]



The photo shows the chair you are sitting on.

Have a think - If you were in charge of recycling what could the designer have done or considered right back at the design stage to help make it easier for you to recycle it at the end of its life?

You're welcome to stand up and examine the chair in this exam if you think it might help.

- iii) If designers are to think about how their designs might be **Recycled** at the end of their life what could the designer do when designing a product to help make this process an easier and more natural one?
- a)
 - b)
 - c)
- [3]

3 The image below shows a garden spade. The spade could have been made from a variety of materials.

i) What do you think the **handle** is made from?

.....

ii) What properties and characteristics make this material suitable for the **handle**?

.....
..... [2]

iii) What do you think the **shaft** is made from?

.....

iv) What properties and characteristics make this material suitable for the **shaft** of the spade?

.....
..... [2]

v) What do you think the **blade** is made from?

.....

vi) What properties and characteristics make this material suitable for the **blade**?

..... [2]

vii) The blade isn't flat. It is curved. Can you think why the designer thought it might be better if it were curved?

.....

..... [2]



Question total 8 marks

End of the exam – Please check your answers

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