

# Revision - Resistant Materials 2005.

The theme for your final exam is *Office furniture and equipment*, focussing on *desktop organisation*. The pre-release sheet gives you an indication of the types of products that you will get asked questions about. This could include **desktop organisers, desk tidies, storage of paper and other stationery**.

The following are the areas which will appear in the exam:

- Materials and finishes - Names of suitable materials and the type of finish that could be applied.
- Product Analysis - Critically discussing the advantages/disadvantages of a given product.
- Health and safety - Issues to do with the production of a desk tidy and its use.
- Evaluation and testing - How products can be tested and improved.
- Customer protection - Safety and quality of products (British Standards etc)
- Design requirements - Producing designs for a desk tidy with a given specification.
- Scales of production - The difference between one-off, batch and mass production.
- Quantity production - mass production techniques - Use of jigs/templates. Plastic forming techniques (Injection moulding and vacuum forming etc).
- Systems - Input-Process-Output

The following may also appear on the exam:

- Construction techniques - How the products could be assembled.
- Ergonomics - What and how human sizes will affect the design of desk tidies.
- CAD/CAM - Use in producing desk tidies or its components.  
Advantages/disadvantages etc.
- Environmental issues - Use of materials. Recycling etc.

The vast majority of questions on your exam paper will be to do with this theme; however, there will also be some general Design and Technology questions which do not relate to the theme, perhaps centred around the above 4 points.

Following are some questions you could get asked. Work through these questions as part of your revision. Questions you cannot answer, find out the answers to!

## 1. Give **four** design requirements (specification points) for a desk tidy, and explain each point

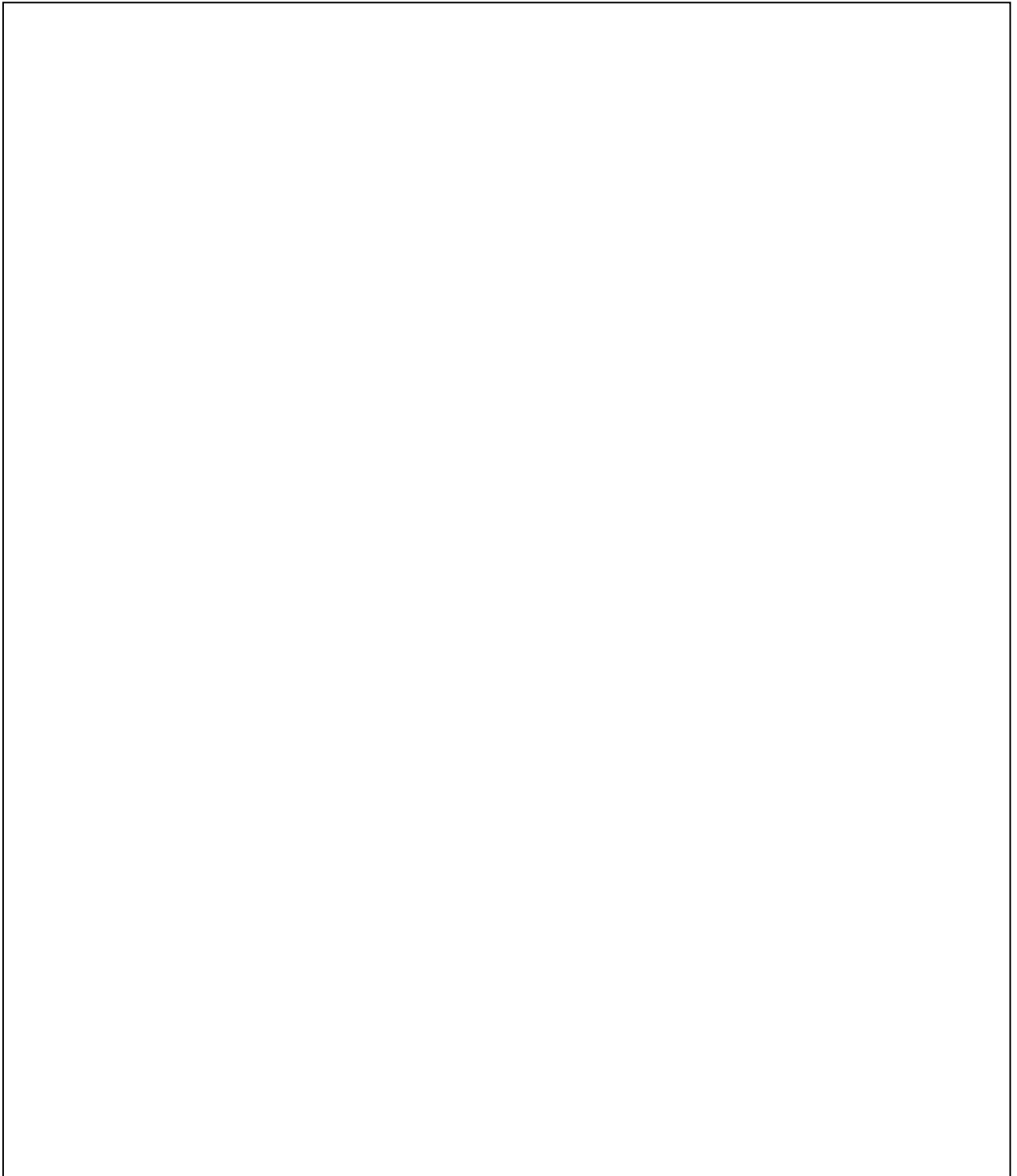
a) Requirement 1 - \_\_\_\_\_  
Reason - \_\_\_\_\_  
\_\_\_\_\_

b) Requirement 2 - \_\_\_\_\_  
Reason - \_\_\_\_\_  
\_\_\_\_\_

c) Requirement 3 - \_\_\_\_\_  
Reason - \_\_\_\_\_  
\_\_\_\_\_

d) Requirement 4 - \_\_\_\_\_  
Reason - \_\_\_\_\_  
\_\_\_\_\_

2. Produce **three** different design ideas for a desk tidy which is capable of holding, 10 pens/pencils, a 300mm ruler, paperclips and drawing pins, a computer floppy disc and a bottle of Tippex. Make reference to your design requirements from Question 2. Colour and annotate your designs.



3. Give **three** different ways that you could test and evaluate your designs

a) Method 1 - \_\_\_\_\_

\_\_\_\_\_

b) Method 2 - \_\_\_\_\_

\_\_\_\_\_

c) Method 3 - \_\_\_\_\_

\_\_\_\_\_

4. From testing, it was discovered that consumers would like to have **either** somewhere to store a mobile phone, **or** to include a selotape dispenser. Develop one of your ideas to include **either** mobile phone holder, **or** selotape dispenser.

5. Below is a picture of a wooden desk tidy.



- a) The desk tidy is made from Teak. Give 2 reasons why this material has been chosen.

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- b) Name another suitable hardwood the desk tidy could be made from instead.

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- c) Name a softwood the desk tidy could be made from instead

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d) The desk tidy is supplied without a finish. What does this mean?

e) \_\_\_\_\_  
\_\_\_\_\_

f) Name 2 suitable finishes that could be applied to the desk tidy.  
\_\_\_\_\_  
\_\_\_\_\_

6. Below is a picture of another type of desk tidy made from plastic.



a) Name a suitable plastic for making this desk tidy \_\_\_\_\_  
Reason? \_\_\_\_\_

b) The desk tidy is to be made by injection moulding. Use **notes and sketches** to describe the process of injection moulding.

7. Items can be manufactured in various *scales of production*. Explain what each term means and give an example of product made in each way.

a) One-off production - \_\_\_\_\_

Example product - \_\_\_\_\_

b) Batch production - \_\_\_\_\_

Example product - \_\_\_\_\_

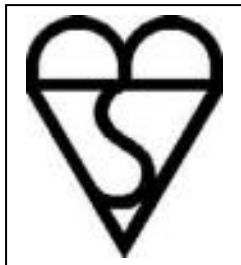
c) Mass production - \_\_\_\_\_

Example product - \_\_\_\_\_

d) Continuous production - \_\_\_\_\_

Example product - \_\_\_\_\_

8. The symbol below can be found on many products.



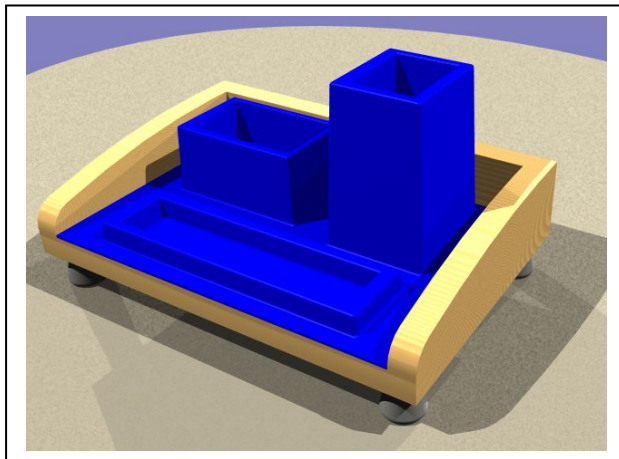
a) What is this symbol called? \_\_\_\_\_

b) What 2 things does this mean to the consumer if they buy a product with this symbol on?

i) \_\_\_\_\_

ii) \_\_\_\_\_

9. A manufacturer is going to produce the desk tidy shown below.



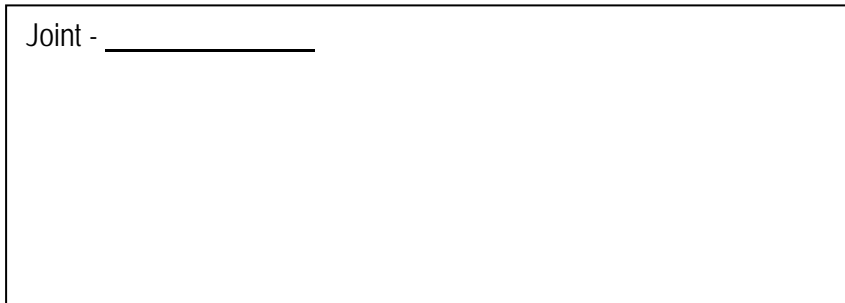
a) Name a suitable wood for making the main part of this design and give 2 reasons why this material has been chosen.

Material - \_\_\_\_\_

Reasons - \_\_\_\_\_

b) Name and sketch a suitable joint which could be used at the back corners.

Joint - \_\_\_\_\_



- c) The feet are to be made from a non-ferrous metal. Name a suitable metal.  
\_\_\_\_\_
- d) The feet will be made on a CNC lathe. Describe 2 advantages and 2 disadvantages of using CAM to manufacture components  
 Advantage 1 - \_\_\_\_\_  
 Advantage 2 - \_\_\_\_\_  
 Disadvantage 1 - \_\_\_\_\_  
 Disadvantage 2 - \_\_\_\_\_
- e) There will be a plastic insert in the desk tidy. This will be made by vacuum forming. Give 3 important features of the design for the mould  
 i) \_\_\_\_\_  
 ii) \_\_\_\_\_  
 iii) \_\_\_\_\_
- f) Use **notes and sketches** to describe the process of vacuum forming.

10. Safety in the workshop is very important. List 6 safety points that a manufacturer should consider to ensure that it provides a safe environment for its workers.


11. Complete the systems diagram below for a paper shredder.

INPUT	PROCESS	_____.
_____.	Paper being shredded by the cutters	Shredded paper

**TIPS FOR THE EXAM.**

Look at existing office equipment (Argos etc) and try and work out what materials and fixings have been used and why. Revise thoroughly; use books, ask in school for help, and use the Departments revision website [www.the-warren.org](http://www.the-warren.org)  
 Go to the exam equipped – take pens, pencils, ruler etc, and also **coloured pencils**.  
 Plan your time - spend about 1 minute per mark.  
 Don't panic!!!

Good luck!!!