

Q1.

Discuss how *Planned Obsolescence* might be harmful for the environment. Give examples of products in your answer.

Quality of Written Communication will be assessed in your answer.

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(Total 8 marks)

Q2.

Explain why many products are manufactured in mass production using Computer Aided Manufacture (CAM).

Give examples of products to explain your answer.

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(Total 8 marks)

Q3.

Describe some of the ways Information Communication Technology (ICT) can be used in developing and modelling ideas.

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(Total 6 marks)

Q4.

Products are often developed because of Continuous Improvement to make them more appealing to the consumer.

Explain why continually improving products could affect the environment.

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(Total 8 marks)

M1.

Planned obsolescence is the conscious decision on the part of a manufacturer to produce a consumer product that will become obsolete and/or non-functional in a defined time frame. Planned obsolescence has great benefits for a producer in that it means a consumer will buy their product repeatedly, as their old one is no longer functional or desirable and not economical to repair.

Planned obsolescence has an obvious detrimental effect on the environment as it is a planned waste of resources, particularly as typical products might use high levels of non-renewable or difficult to recycle materials. Planned obsolescence encourages use of more non-renewable materials, energy for processing raw materials and production processes, transport, pollution, packaging materials and disposal in land fill. Products could be built to last and be repairable – reference to 5 R's.

A concise and detailed response showing a good understanding of the above factors. Examples of relevant products used to illustrate points. Response well structured with good use of appropriate design and technology terminology and showing a good grasp of grammar, punctuation and spelling.

7-8 marks

A sound response showing a basic understanding of the above factors. At least one example of relevant products used. Response fairly well structured with some use of design and technology terminology with small number of errors in grammar, punctuation and spelling.

5-6 marks

A reasonable response although may be simplistic and lacking in detail, examples of products or understanding of planned obsolescence. Response has simple structure with limited use of design and technology terminology and some errors in grammar, punctuation and spelling.

3-4 marks

A simplistic statement which mentions one point only. Response may not include examples of relevant products or products selected may not be appropriate to argument. Response poorly structured with little or no use of design and technology terminology and with numerous errors in grammar, punctuation and spelling.

1-2 marks

No relevant argument presented.

0 marks

No credit for consumable products such as disposable razors or batteries

[8]

M2.

CAM manufacturing more efficient - accurate and much faster than manufacture by hand. Materials purchased in bulk much cheaper than in smaller quantities. Products nested to make maximum use of material in stock form. Once prototype developed to be suitable for mass manufacture, CAM makes every product the same within pre determined tolerances; hand made products often bespoke to customer requirements, time taken in design of each one off product, hand skills slower than machine. Less people involved in manufacture by CAM – less cost in terms of workforce.

Initial cost of machine set up offset by mass quantities of product made.

CAM manufacturing not 'quick and easy' unless sufficiently justified.

A concise and detailed response showing a good understanding of the above factors. Examples of relevant products used to show comparison of two types of manufacture and cost implications.

Response well structured with good use of appropriate design and technology terminology and showing a good grasp of grammar, punctuation and spelling.

6–8 marks

A sound response showing a basic understanding of the above factors. Examples of relevant products may be used to show comparison of two types of manufacture and cost implications.

Response fairly well structured with some use of design and technology terminology with small number of errors in grammar, punctuation and spelling.

3–5 marks

A simplistic statement which mentions one point only. Response may not include examples of relevant products or products selected may not be appropriate to argument. Response poorly structured with little or no use of design and technology terminology and with numerous errors in grammar, punctuation and spelling.

1–2 marks

No relevant argument presented.

0 mark

[8]

M3.

Describe some of the ways Information Communication Technology (ICT) can be used in developing and modelling ideas.

CAD 3D modelling using AutoCAD / pro desktop etc. – To show virtual product which can be machined out using a 3D prototype to test before incurring cost of setting machinery to manufacture; to help the designer visualise the product in 3D; to interface with CAM equipment (CNC).

Would need to include stress analysis, destructive testing, marketing / seeking customer feedback, production planning etc.

CAD 2D designing applications such as photoshop, corel draw, 2D design can be used to develop product in 2D. Drawings can be output to laser cutter / vinyl cutter / digital printer etc. Files can be edited to test different colourways, effects, sizes etc and each development saved.

Files can be saved, shared with others in different locations by email, edited without needing to start again.

Concise, detailed and well reasoned response which makes reference to three or more of the above ideas in detail.

5–6 marks

Sound response which makes reference to two of the above ideas in detail or several in brief.

3–4 marks

Basic response which makes reference to one of the above ideas in detail or two in brief.

2 marks

Brief / single word answer with reference to one idea only.

1 mark

[6]

M4.

Continuous Improvement: manufacturers try to continuously improve products through Quality Management, working to standards such as BS EN ISO 9000 2000, guidelines to demonstrate quality controls, looking at how they can do this better, improve the product to make it more economical to produce, incorporate new technology. Continually improving products as a result of improving production processes encourages consumer to want latest versions before existing products need replacing, using up more non renewable resources, increasing consumption, increasing landfill sites, using more packaging etc. Continuous Improvement could be used by manufacturers as an opportunity to look for more environmentally friendly production methods, ways of using less raw materials, less energy in manufacture, increasing lifespan of products. Legislation can force improvement.

A concise and detailed response showing a good understanding of continuous improvement and its impact on the environment including several points well made. Response well structured with good use of appropriate design and technology and showing a good grasp of grammar, punctuation and spelling.

7-8 marks

A sound response showing a basic understanding of continuous improvement, a good understanding of its impact on the environment, 2 to 3 points well made. Response fairly well structured with sound use of design and technology terminology with only small number of errors in grammar, punctuation and spelling.

5-6 marks

A reasonable response showing a basic understanding of continuous improvements its impact on the environment, some points well made or a combination of simplistic statements. Response reasonably well structured with some use of design and technology terminology with some errors in grammar, punctuation and spelling.

3-4 marks

A brief and simplistic statement which mentions one or two points only. Response poorly structured with little or no use of design and technology terminology and with numerous errors in grammar, punctuation and spelling.

1-2 marks

[8]

