01

Exam Questions

Warm-Up Questions:

1. Give two advantages of using a Just-In-Time (JIT) system
2. What is the link between the size of the product's carbon footprint and its impact on global warming?
3. What is meant by planned obsolescence?
4. Name the 6 Rs
5. Manufacturers are always looking for ways to make their products better. For example, they often change their designs to incorporate new technology
6. Describe the difference between renewable and non-renewable energy resources

Worked Exam Questions:

1. Products that are designed to be maintained can have less of an impact on the environment than products which haven't. Explain what is meant by 'design for maintenance'.

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2. A CNC router is an example of a CAM machine. They can be either 2-axis or 3-axis machines.
   a) Give **two** ways that a CNC router can be used.

      1. .....
      2. .....

   b) Explain the difference between 2-axis and 3-axis CAM machines

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3. State **two** arguments against the use of fossil fuels as an energy resource

   1. .....
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2. .....
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Exam Questions

1. Which **one** of the following is a feature of alkaline batteries?

   A. They can be used more than once. ☐

   B. They are built in to products such as mobile phones. ☐

   C. Their power output gradually decreases over time. ☐

   D. They are expensive. ☐

2. Which **one** of the following is a feature of alkaline batteries?

   A. CAM ☐

   B. CNC ☐

   C. CAD ☐

   D. 3D printing ☐

3. Which **one** of the following does the process of crowdfunding **not** involve?

   A. People called backers that invest in an idea. ☐

   B. An application to a bank for a loan. ☐

   C. Promoting a business idea to try and attract investment. ☐

   D. A website to promote a business idea to potential investors. ☐

4. A power tool company regularly releases new, improved versions of the tools that it manufactures.

    a) State **two** reasons why the company regularly releasing new versions of their tools can be environmentally damaging

    1. ……
    ……

    2. ……
    ……

    b) Explain why newer power tools can have a reduced environmental impact compared to older power tools.

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5. Robots are used in many modern factories

    a) State **two** reasons why a company might choose to use robots rather than humans in manufacturing.

    1. ……
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    2. ……
    ……

    b) Give **one** reason why robots aren't always able to replace human workers in manufacturing.

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6. **Figure 1** shows some paper envelopes and some plastic bubble wrap

Figure 1

a) The products shown in **Figure 1** are recyclable.
Give **one** reason why this is good for the environment

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b) The envelopes shown in **Figure 1** are biodegradable but the bubble wrap is not. Why does this make the envelopes more sustainable than the bubble wrap?

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c) A padded envelope is a paper envelope with a layer of bubble wrap inside. What makes padded envelopes difficult to recycle?

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Revision Questions

Well, that's Key Ideas in Design and Technology all wrapped up – time to see how much you can remember.

- Try these questions and tick off each one when you get it right.
- When you've done all the questions for a topic and are completely happy with it, tick off the topic.

Technology in Manufacturing ☐

1) a) Explain what is meant by a Just-in-Time system. ☐
   b) State one disadvantage of using a JIT system. ☐
2) Describe what is meant by a flexible manufacturing system. ☐
3) Describe one way in which smart technology can be used in manufacturing. ☐

Production Systems – CAD/CAM ☐

4) What do DAC and CAM stand for? ☐
5) What is meant by machines being 'computer numerically controlled'? ☐
6) Give an example of a CNC machine. ☐
7) Describe the difference between CAM machines that carry out subtraction and CAM machines that carry out addition of material. ☐
8) Give an example of a material that a 3D printer can print with. ☐
9) Describe how using CAD/CAM can save on shipping costs for business. ☐

Product Sustainability and Social Issues ☐

10) a) Define the term 'sustainability'. ☐
    b) State two factors that influence the sustainability of a product ☐

11) Describe what the carbon footprint of a product is. ☐
12) What is meant by 'Design for Disassembly'? ☐
13) What is the purpose of a life cycle assessment? ☐
14) Which of the following Is not one of the 6 Rs? ☐
    A: Repair B: Reassess C: Rethink D: Recycle
15) Give two ways that firms can help keep their employees safe ☐

Products in Society

16) Briefly describe what is meant by the following terms:
    a) Co-operative b) Virtual retail
17) Tim is designing a mobile phone. Give two ways how technology push could affect his design.
18) Why should people's views be considered when products are designed for a particular culture?

Powering Systems

19) List one advantage and one disadvantage of nuclear power
20) Briefly describe the main steps involved in generating electricity from a fossil fuel power station.
21) A company is considering ways to reduce its energy bills. It is considering building either a single wind turbine nearby, or installing solar panels on top of their main factory.
    a) Suggest two reasons why residents living near the turbine may prefer the use of solar power.
    b) Suggest one reason why the company may choose a wind turbine over solar panels