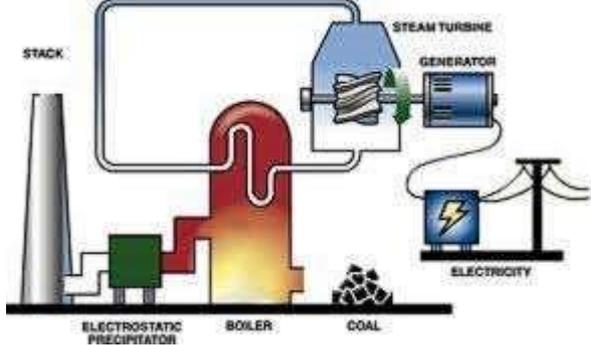


GCSE Design and Technology

Revision Questions

Section A: Core Technical Principles

1. Describe what is meant by Fair trade.	Fair trade is a movement that aims to achieve fairer trading conditions and opportunities that promote sustainability for developing countries.
2. State 2 finite sources of energy.	Wind, solar, geothermal, biomass
3. State 2 non-finite sources of energy.	Coal, gas
4. State what is meant by the term planned obsolescence.	Planned obsolescence is designing products with the intent for them to stop working or go out of fashion
5. Using notes and diagrams, explain how coal is used to create energy.	 <p>The diagram illustrates the process of generating electricity from coal. It shows a stack on the left, an electrostatic precipitator, a boiler where coal is burnt, a steam turbine connected to the boiler, a generator connected to the turbine, and a power line leading to a transformer labeled 'ELECTRICITY'.</p> <p>Coal is burnt to create the heat required to boil water. When boiling, the water creates steam which drives the turbine part of the generator. The rotating turbine blade turns a generator which creates electrical energy.</p>
6. Define what is meant by a composite material.	A composite material is a material made by combining/mixing two or more other materials
7. Name two different papers.	Bleed proof , cartridge paper ,grid, layout paper, tracing paper .

8. Name two different boards.	Corrugated card, duplex board, foil lined board, foam core board, ink jet card, solid white board.
9. Name two different hardwoods.	Ash, beech, mahogany, oak, balsa
10. Name two different softwoods.	Larch, pine, spruce
11. Name two different manufactured boards.	Medium density fibreboard (MDF), plywood, chipboard.
12. Name two different ferrous metals.	Low carbon steel, cast Iron, high carbon/tool steel
13. Name two different non-ferrous metals.	Aluminium, copper, tin, zinc
14. Name two different alloys.	Brass, stainless steel, high speed steel
15. Name two different thermoplastics.	<ul style="list-style-type: none"> • acrylic (PMMA) • high impact polystyrene (HIPS) • high density polythene (HDPE) • polypropylene (PP) • polyvinyl chloride (PVC) • polyethylene terephthalate (PET)
16. Name two different thermosetting plastics.	<ul style="list-style-type: none"> • epoxy resin (ER) • melamine-formaldehyde (MF) • phenol formaldehyde (PF) • polyester resin (PR) • urea-formaldehyde (UF).
17. Name a natural fibre.	Cotton, silk
18. Name a synthetic fibre.	Polyester, nylon

Define the meaning of the following material properties:

a. Absorbency	(resistance to moisture)
b. Density	(mass per unit volume)

c. Fusibility	(Fusibility (ability to melt easily (change from a solid to a liquid))
d. Electrical conductivity	(ability to transmit electricity well)
e. Tensile strength	(ability to withstand an applied stretching/tensile force)
f. Hardness	(ability to withstand scratching, cutting or indentation)
g. Toughness	(ability to withstand impacts)
h. Malleability	(ability to deform under pressure without splitting)
i. Ductility	(ability to be drawn (stretched) in to a wire)
j. Elasticity	(ability to stretch and return to original shape)

Section B: Specialist Technical Principles

1. State two negative effects of deforestation?	Negative effects of deforestation include: loss of habitat, risk of soil erosion, decrease in carbon captured by forests
2. Explain why mining is required for metal ores.	Metal ores are found under the ground and mining is required to expose them.
3. State the six Rs.	Reduce, reuse, recycle, rethink, refuse, repair

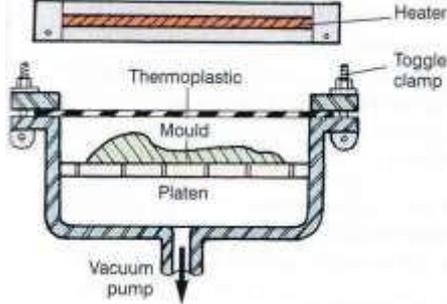
4. State the sources (origins) of the following materials:

a. Paper	Trees
b. MDF	Trees
c. Aluminium	Metal ore (bauxite)
d. Polypropylene	Crude oil

5. What are the properties of the following materials:

a. Corrugated cardboard	Flexible, good compressive strength, absorbs moisture, lightweight.
b. Oak	Good toughness, high density, heavy.
c. Low carbon steel	Good toughness, high density, heavy, fair electrical conductivity.
d. ABS	Waterproof, good impact strength, lightweight, colourful.

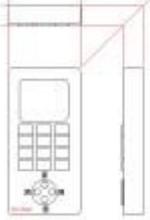
6. Describe the process of air seasoning of larch.	 <p>The larch planks are stacked with spacers in between to allow air flow around each plank. They are stacked under a cover and then left for 6 months to 2 years until the moisture content has reduced to the desired level.</p>
7. Name three different ways of cutting plywood.	Coping saw, bandsaw, tenon saw
8. Name three different ways of cutting low carbon steel sheet.	Hacksaw, junior hacksaw, oxyacetylene torch
9. Name three different stock forms of material.	Sheet, bar, rod, ingot, granule
10. Describe the advantages of using stock forms of material.	Stock forms are readily available so there is no waiting to for materials to be made to order. Customers know exactly what the size of the stock form will be. Prices of stock forms are low compared to materials that are cut to specific sizes.

11. Define what is meant by batch production.	Batch production is the manufacture of products in small 'batches' of, for example, between 2 and 100.
12. Using notes and diagrams, describe the process of vacuum forming.	 <p>A sheet of HIPS is clamped over the mould. The mould is on a lowered platen. The HIPS is heated until soft.</p>
	When soft, the platen is raised and the air is removed. Air pressure then forces the softened HIPS sheet over the mould. The sheet is left to cool and the mould removed.
13. Name a wood or metal and describe in detail how to apply a specific finish that will prevent degradation or corrosion.	Ash: Polyurethane varnish is applied using a brush. It should be brushed on in the direction of the wood grain and allowed to dry. Once dry, it should be lightly sanded and a second coat applied.

Section C: Designing and Making Principles

1. Define the meaning of the following terms:

a. Ergonomics	Ease of use
b. Anthropometrics	Human size
c. Human factors	Any data relating to people
d. Market research	Researching what potential customers / buyers want a product to be like

<p>2. Discuss why might a designer choose to present their ideas in 3D.</p>	<p>3D drawings are more realistic and easier to understand than 2D drawings. They allow more sides of a product to be seen, thus providing more detail than a 2D drawing.</p>
<p>3. Explain why are annotations on design ideas important.</p>	<p>Annotations are important to explain ideas, thoughts, materials and any explanatory or evaluator comments about the design.</p>
<p>4. Sketch a third angle orthographic drawing of a mobile phone.</p>	
<p>5. Describe how materials can be marked out to minimise waste. Use a sketch to help explain your answer.</p>	<p>Materials should be marked close to an edge or tessellated to avoid waste.</p>
	