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Design & Technology
AQA GCSE

Commercial processes

Materials required for questions

- Pencil
- Rubber
- Calculator

Instructions

- Use black ink or ball-point pen
- Try answer all questions
- Use the space provided to answer questions
- Calculators can be used if necessary
- For the multiple choice questions, circle your answer

Advice

- Marks for each question are in brackets
- Read each question fully
- Try to answer every question
- Don’t spend too much time on one question

Good luck!

Q1. Which process is commonly used for mass-producing printed materials like books and packaging?

A Weaving

B Offset lithography

C Flow soldering

Q2. What is the primary purpose of die cutting in paper and board manufacturing?

A To join layers of material together

B To apply ink to the surface

C To cut precise shapes out of sheet materials

Q3. Which machine tool is used to hollow out wood in woodworking?

A Lathe

B Router

C Extruder

Q4. Injection moulding is most associated with which group of materials?

A Timber

B Metals

C Polymers

Q5. Name one specific commercial manufacturing process and describe what it is used for. Using notes and/or sketches describe the process you have named above **(4 marks)**

Answers

Q1. B
Q2. C
Q3. B
Q4. C

Q5.

Papers and boards	Offset lithography Screen printing Digital printing	Printing design and information on paper and card.
	Die cutting	Cutting out of nets. Making perforations. Creasing of card.
Timber based materials	Routing	Production of grooves, rebates and joints.
	Turning	Turning cylindrical objects and shapes.
	Lamination	Bonding layers of veneers or laminas together to create a large flat board or a complex curved shape using a former.
	Machine morticing	Cutting square or rectangular holes in a piece of timber to create joints. (Also note that mortices often have round ends so must be considered if in answer).
Metal based materials	Milling	Horizontal or vertical milling of a flat surface, groove, rebate or hole
	Casting	Redistribution of metal in molten form to fill a mould or cavity
	Welding	Redistribution of at least 2 pieces of metal

		along and edge/spot/seam to create a permanent joint.
	Brazing	Use of solder to join two or more pieces of metal together without physically melting them.
	Sintering	The compression of powdered metals in a die using heat and extreme pressure to create a solid product in final shape.
Polymers	Injection moulding	The heating and injection of molten polymer into a mould to produce a 3D shape.
	Extrusion	Where molten polymer is extruded through a die to produce a consistent shaped profile.
	Vacuum forming	Heating of sheet polymer so that it softens and can be shaped in a mould by extracting the air between the material and the form.
	Calendaring	Manufacture of thin thermoplastic film.
	Rotational moulding	Used to manufacture hollow 3D products using an enclosed mould containing thermoplastic polymer in powder form.
	Blow moulding	Polymer in tube form is extruded (parison), the

		end sealed and hot air blown in to forcing the polymer out into a mould to create a hollow shape.
Textile based materials	Weaving	Fabrics are woven on looms to produce large rolls of cloth in either plain or repeating patterns.
	Dying	Fibres are dyed commercially before weaving to establish a fibre colour dying can be done by batch dying in a tank or continuous dying using various tanks and rollers to move the fabric along.
	Printing	Roller printing, screen printing and digital printing all transfer images to the fabric.
	Machine sewing	Specialist sewing techniques like the overlock stitch can be used to create a tough and durable edge, hem or seam.
Electrical and mechanical systems	Pick and place assembly	Used to select and position individual components in predetermined positions quickly and consistently on a PCB.
	Flow soldering/ Reflow soldering	Used in surface mounting of electrical components. Components are located on a PCB on

		pre-soldered pads. PCB is then placed in a reflow oven where the solder melts connecting the component to the PCB.
	Wave soldering	Circuit boards have pre drilled holes with components located in position. PCB board then moves on a conveyer belt over a molten solder wave, bonding the components to the PCB as the solder cools.
	PCB manufacture Etching	Different to photoresist PCB manufacture done in school by spraying the etch directly onto a developed PCB board.
	PCB lacquering	Application of a polymer layer to protect PCB from corrosion, dust and dirt.

Q10.

Q11.