

# Design & Technology

# Lamination

## Materials required for questions

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- Pencil
- Rubber
- Calculator

## Instructions

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- Use black ink or ball-point pen
- Try to 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

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- Marks for each question are in brackets
- Read each question fully
- Don't spend too much time on one question

# Good luck!

**Q1.** Which one of the following processes involves the use of heat?

- A** Lamination
- B** Vacuum forming
- C** Turning

**Q2.** Which one of the following statements is true about lamination?

- A** It is cheap to use
- B** It has a good quality finish
- C** It comes in small sheets

**Q3.** Which one of the following statements is true about lamination?

- A** It can be recycled
- B** It is lighter than solid wood
- C** It can't be damaged by water/moisture

**Q4.** Which one of the following statements is true about lamination?

- A** It can be shaped into a curve
- B** It is a weak material
- C** Layers are not visible

**Q5.** Describe the process of forming a timber product using lamination (6 marks)

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**Q6.** A prototype of a bridge has curved beams, which have been produced by laminating. Give **two** benefits of using lamination to manufacture the curved beam (2 marks)

1.

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2.

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## Answers

Q1. B

Q2. A

Q3. B

Q4. A

Q5.

- Several thin layers of veneer or thin plywood (1.2mm – 3mm thickness) can successfully be combined to the required thickness (1)
- Adhesive is placed between each layer (1)
- A two part former is used and pressure applied with clamps or a press while the lamination dries (1)
- Excess adhesive from the moulding process can be removed (1)
- A bag press or vacuum bag can be used with a styrofoam mould or equivalent former (1)
- Simple curved shapes can be achieved (1)
- Cross linked adhesive or 'cascamite' can be used to create a stronger glued joint (1)
- Lamination can be trimmed to size once formed (1)
- Laminated products can also be achieved by combining several sheets of kerfed flexible MDF (1)

Q6.

Any **two** from the following:

- Sections have increased strength / adhesive is generally stronger than timber (1)
- Thinner / shorter sections can be used / do not need long lengths (1)
- Sections can be bent more easily (1)
- Laminated curved sections require less wood than cutting the beam from solid timber (1)
- Less prone to natural faults (splits, knots, waney edge) (1)
- Beams are more stable (1)
- Beams can be made as deep as needed / not limited by timber sizes (1)
- Formers can be re-used to produce identical beams (1)
- The beam resists natural tendency to straighten (1)