**Design & Technology** Logo

Description automatically generated with low confidence

**Woods**

**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 hardwood has very few knots?

**A** Mahogany

**B** Ash

**C** Beech

**Q2.** What is one factor that makes hardwoods more expensive than softwoods?

**A** Hardwoods need more care

**B** Hardwoods have higher density

**C** Hardwoods grow slower

**Q3.** Which hardwood is good for steam bending?

**A** Ash

**B** Oak

**C** Beech

**Q4.** What manmade board has perpendicular layers?

**A** Chipboard

**B** Plywood

**C** MDF

**Q5.** Which softwood stains well?

**A** Spruce

**B** Pine

**C** Larch

**Q6.** Chipboard can be toxic/had to recycle for what reason?

**A** The adhesives in it

**B** Its recycled wood

**C** It has a very high density

**Q7.** Plywood is used in many school workshops for what reason?

**A** More durable than natural timber

**B** It’s cheap

**C** Finishes well

**Q8.** What is the main advantage of manufactured boards over natural timbers?

**A** Much cheaper than natural timber

**B** Made in any shape/size/thickness

**C** Much stronger than natural timber

**Q9.** MDF is going to be used to make a picture frame backing board.

**(a)** Explain the environmental advantage of using MDF instead of pine to make a wall clock? **(2 marks)**

**(b)** MDF comes in 61cm × 122cm sheets.

Determine the number of 400mm x 400mm squares that can be cut from the given sheet. **(4 marks)**

**Q10.** A CNC router was used to create the base of a chess board from a single bit of oak.

Explain three mechanical properties of oak that make it a good choice for the construction of the chess board **(6 marks)**

**Q11**. The handle of a kitchen knife has been made from the hardwood mahogany

Explain two benefits of using mahogany instead of pine for the kitchen knife handle **(4 marks)**

**Q12.** Plywood is to be used to make a phone stand.

What are two advantages, aside from cost, of using plywood instead of solid wood for the production of the phone stand **(4 marks)**

**Answers**

**Q1**. A

**Q2**. C

**Q3**. A

**Q4**. B

**Q5**. A

**Q6**. A

**Q7**. B

**Q8**. B

**Q9a.**

* Because MDF is created with waste materials (1), there is no need for the leftovers to be disposed of or dumped in a landfill (1).
* Using MDF will reduce the amount of natural timber being cut down (1), therefore pine as a natural resource will last longer/be put to better use (1).

**Q9b.**

400 mm = 40 cm (1)

61 = 1 whole cuts (1)

122 = 3 whole cuts (1)

1 × 3 = 3 whole cuts (1)

**Q10.**

* Strong (1) to withstand splitting (1)
* Tough (1) can absorb impacts (1)
* Hard (1) so won’t wear away during use (1)
* Dense (1) allowing for high-definition machining (1)
* Stable (1) to prevent warping (1)
* Heavy (1) preventing movement when in use (1)
* Durable (1) so will be long-lasting (1)

**Q11.**

* Mahogany is less likely to splinter (1), as it is more dense than pine (1).
* Mahogany is more durable (1), meaning it is less likely to break when used (1).
* Mahogany is knot free (1), so there won’t be any vulnerable weak areas (1).

**Q12.**

* Plywood resists warping (1) since it is a dimensionally stable material (1).
* Because plywood has uniform strength (1), tiny details are less prone to come loose (1).
* Plywood can be knot free (1), so there won’t be any vulnerable weak areas (1).