

**Victorian Certificate of Education  
2015**

SUPERVISOR TO ATTACH PROCESSING LABEL HERE

STUDENT NUMBER           Letter

**VCE VET FURNISHING (CABINET MAKING)**  
**Written examination**

**Monday 9 November 2015**

**Reading time: 9.00 am to 9.15 am (15 minutes)**

**Writing time: 9.15 am to 10.45 am (1 hour 30 minutes)**

**QUESTION AND ANSWER BOOK**

**Structure of book**

| <i>Section</i> | <i>Number of questions</i> | <i>Number of questions to be answered</i> | <i>Number of marks</i> |
|----------------|----------------------------|---|------------------------|
| A              | 20                         | 20  | 20                     |
| B              | 13                         | 13  | 45                     |
| C              | 7                          | 7   | 35                     |
|                |                            |   | Total 100              |

- Students are permitted to bring into the examination room: pens, pencils, highlighters, erasers, sharpeners, rulers and one scientific calculator.
- Students are NOT permitted to bring into the examination room: blank sheets of paper and/or correction fluid/tape.

**Materials supplied**

- Question and answer book of 21 pages. There is a detachable insert for Section C in the centrefold.
- Answer sheet for multiple-choice questions.

**Instructions**

- Write your **student number** in the space provided above on this page.
- Check that your **name** and **student number** as printed on your answer sheet for multiple-choice questions are correct, **and** sign your name in the space provided to verify this.
- All written responses must be in English.

**At the end of the examination**

- Place the answer sheet for multiple-choice questions inside the front cover of this book.

**Students are NOT permitted to bring mobile phones and/or any other unauthorised electronic devices into the examination room.**

**SECTION A – Multiple-choice questions****Instructions for Section A**

Answer **all** questions in pencil on the answer sheet provided for multiple-choice questions.

Choose the response that is **correct** or that **best answers** the question.

A correct answer scores 1, an incorrect answer scores 0.

Marks will **not** be deducted for incorrect answers.

No marks will be given if more than one answer is completed for any question.

**Question 1**

Steve has to design a new chair. It must be lightweight with small section sizes.

To achieve this, which is the most important property of the timber?

- A. high impact resistance
- B. close interlocking grain
- C. pale-coloured heartwood
- D. high strength-to-weight ratio

**Question 2**

Clare has to choose an adhesive to assemble a leg and rail chair frame.

Which one of the following is the most appropriate adhesive for this task?

- A. hot hide glue
- B. two-part epoxy resin
- C. single-part polyurethane
- D. general purpose polyvinyl acetate

**Question 3**

A hand-rubbed oil finish is required for a dining table.

What is the finest sanding grit that should be used before oiling the dining table?

- A. 80
- B. 120
- C. 240
- D. 150

**Question 4**

When applied over dry PVA glue, stain and lacquer finishes develop a defect called 'glue blush'.

When assembling chairs, what should be done to prevent glue blush from occurring?

- A. Remove all glue when sanding the job.
- B. Remove all glue with a damp rag.
- C. Use only a small amount of glue.
- D. Use the darkest possible stain.

**Question 5**

In leg and rail construction, stretcher rails

- A. are a decorative feature.
- B. can be positioned anywhere.
- C. are used to strengthen the legs.
- D. can be only two-thirds of the width of the legs.

**Question 6**

When making a piece of furniture, a chamfer is a

- A. narrow strip of timber.
- B. vertical component of the door.
- C. bevelled edge connecting two surfaces.
- D. rectangular column attached to the face of a cabinet.

**Question 7**

What information is required to calculate the quantity, in square metres, of veneered particle board needed to make an item of furniture?

- A. length, width, thickness
- B. length, width, number of pieces
- C. thickness, width, number of pieces
- D. number of pieces, length, thickness

**Question 8**

What is the quantity, in square metres, of a 2400 mm × 1200 mm sheet of melamine-coated chipboard?

- A. 36.00
- B. 28.80
- C. 2.88
- D. 3.60

**Question 9**

Which letter on the back of a sheet of abrasive paper identifies the abrasive grit size?

- A. P
- B. G
- C. R
- D. S

**Question 10**

A wooden hammer is also known as a

- A. mallet.
- B. hammer.
- C. pein hammer.
- D. mash hammer.

**Question 11**

Which of the following tools can be used to check angles?

- A. saw and pincers
- B. chisel and planes
- C. clamps and cramps
- D. try square and bevel

**Question 12**

Andrea is completing a cutting list.

Items on the cutting list with lengths within 2 mm of each other

- A. must be shown last on the list.
- B. must be shown as separate items.
- C. can be included in the same item.
- D. should be left off the cutting list.

**Question 13**

What is the correct angle for sharpening a jack plane blade?

- A. less than 25°
- B. more than 30°
- C. between 25° and 30°
- D. between 30° and 35°

**Question 14**

Defects in timber can have a serious effect on the finished piece of furniture.

Which one of the following is a defect in timber?

- A. crown
- B. fiddleback
- C. blackwood
- D. surface checks

**Question 15**

What is the ratio used to mark out dovetails on a solid timber drawer?

- A. 1:3
- B. 1:6
- C. 1:7
- D. 1:10

**Question 16**

Which tool should be used to duplicate the existing shape of a skirting board onto the plinth of a bookcase?

- A. mitre square
- B. profile gauge
- C. sliding bevel
- D. sliding square

**Question 17**

To achieve a flush surface when fixing timber components together, which screws should be used?

- A. countersunk screws
- B. self-tapping screws
- C. pan-head screws
- D. tek screws

**Question 18**

John is using a new adhesive to glue laminate to manufactured boards when assembling bedroom furniture.

Which document explains the safety precautions for using the adhesive?

- A. the Risk Assessment sheet
- B. the Building Code of Australia
- C. the Job Safety Analysis sheet (JSA)
- D. the Material Safety Data Sheet (MSDS)

**Question 19**

The most appropriate drill bit to use when constructing a dowelled leg and rail joint is

- A. a brad-point drill bit.
- B. a masonry drill bit.
- C. an auger drill bit.
- D. a spade drill bit.

**Question 20**

The main purpose of the testing and tagging labels on power tools is to indicate that the tool

- A. has been tested for electrical faults.
- B. can be used anywhere.
- C. has a model number.
- D. is safe to use.

**SECTION B – Short-answer questions**

**Instructions for Section B**

Answer **all** questions in the spaces provided.

**Question 1** (6 marks)

Identify the following tools. What is a task that each tool is used for?

1.



Name of tool \_\_\_\_\_

Task \_\_\_\_\_

2.



Name of tool \_\_\_\_\_

Task \_\_\_\_\_

3.

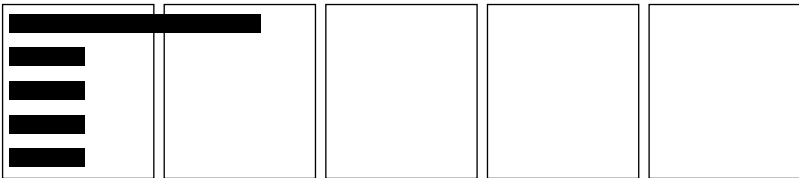


Name of tool \_\_\_\_\_

Task \_\_\_\_\_

\_\_\_\_\_

Use Figure 1 to answer Questions 2–4.

| Material Safety Data Sheet (extract)   |  |             |
|--|--|-------------|
| Section 1 – CHEMICAL PRODUCT   |  |             |
| <b>PRODUCT NAME</b>  |  |             |
| FSC TIMBER VENEER  |  |             |
| <b>SYNONYMS</b>  |  |             |
| 'stained craft wood', 'medium density fibreboard', 'MDF', 'fibre board'  |  |             |
| <b>PRODUCT USE</b>   |  |             |
| General purpose wood fibreboard for furniture/cabinet making, and internal wall panelling. Depending on age of board, formaldehyde odour may reappear on machining because of exposure of fresh surfaces by sawing, routing. |  |             |
| When cutting with blunt tools or when cutting speeds are low more formaldehyde is given off as heat developed starts to decompose the urea formaldehyde glue.  |  |             |
| Section 2 – HAZARDS IDENTIFICATION   |  |             |
| <b>STATEMENT OF HAZARDOUS NATURE</b>   |  |             |
| NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. According to NOHSC Criteria, and ADG Code.   |  |             |
| <b>HAZARD RATINGS</b>  |  |             |
| Flammability   |  |             |
| Toxicity   |  |             |
| Body contact   |  |             |
| Reactivity   |  |             |
| Chronic  |  |             |
| SCALE:   | Min/Nil = 0  | Low = 1     |
|  | Moderate = 2   | High = 3    |
|  |  | Extreme = 4 |
| Section 3 – COMPOSITION/INFORMATION ON INGREDIENTS   |  |             |
| <b>NAME</b>  | <b>CAS RN</b>  | <b>%</b>    |
| wood particles   |  | >86         |
| urea/formaldehyde resin  | 9011-05-6  | 1–12        |
| paraffin wax   | 8002-74-2  | 0–2         |
| stain  |  | <5          |

Source: extract from Chemwatch

Figure 1



**Question 2** (2 marks)

According to the Material Safety Data Sheet (MSDS), is the FSC timber veneer dangerous or hazardous?  
Explain your answer.

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**Question 3** (2 marks)

According to the hazard ratings chart, what are the flammability and toxicity ratings for the FSC timber veneer?

Flammability \_\_\_\_\_

Toxicity \_\_\_\_\_

**Question 4** (4 marks)

List the four materials that make up the FSC timber veneer.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

Use Figure 2 to answer Questions 5 and 6.

## Material Safety Data Sheet (extract)

### Section 1 – CHEMICAL PRODUCT

#### PRODUCT NAME

INTERIOR POLYURETHANE GLOSS RANGE

#### SYNONYMS

Gloss, Satin, Matt

#### PROPER SHIPPING NAME

PAINT or PAINT RELATED MATERIAL

#### PRODUCT USE

- Used according to manufacturer's directions.  
The use of a quantity of material in an unventilated or confined space may result in increased exposure and an irritating atmosphere developing. Before starting consider control of exposure by mechanical ventilation.

### Section 7 – HANDLING AND STORAGE

#### PROCEDURE FOR HANDLING

- – DO NOT allow clothing wet with material to stay in contact with skin.
- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.

#### SUITABLE CONTAINER

- – Polyethylene or polypropylene container.
- Packing as recommended by manufacturer.
- Check all containers are clearly labelled and free from leaks.

#### STORAGE INCOMPATIBILITY

- – Avoid reaction with oxidising agents.

#### STORAGE REQUIREMENTS

- – Store in original containers.
- Keep containers securely sealed.
- No smoking, naked lights or ignition sources.
- Store in a cool, dry, well-ventilated area.

### Section 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

#### ENGINEERING CONTROLS

- Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.  
The basic types of engineering controls are:  
Process controls which involve changing the way a job activity or process is done to reduce the risk.  
Enclosure and/or isolation of emission source which keeps a selected hazard 'physically' away from the worker and ventilation that strategically 'adds' and 'removes' air in the work environment.

Source: extract from Chemwatch

Figure 2

SECTION B – continued

**Question 5** (2 marks)

Andy is ready to apply the polyurethane gloss to a bedside table, but before this he needs to pour some of the product into a small container.

List two containers into which the product can be poured.

1. \_\_\_\_\_

2. \_\_\_\_\_

**Question 6** (2 marks)

Andy is trying to find a suitable location to apply the product. The covered loading bay at the factory where he works is enclosed on three sides and is mostly dust free.

Consider whether this is a suitable place to apply the finish. Give two reasons why or why not.

1. \_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_

**Question 7** (4 marks)**Material Safety Data Sheet (extract)****Section 13 – DISPOSAL CONSIDERATIONS**

- Legislation addressing waste disposal requirements may differ by country, state and/or territory. Each user must refer to laws operating in their area.  
A Hierarchy of Controls seems to be common – the user should investigate:
  - Reduction.
  - DO NOT allow wash water from cleaning or process equipment to enter drains.
  - It may be necessary to collect all wash water for treatment before disposal.
  - In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.
  - Where in doubt contact the responsible authority.
  - Recycle wherever possible.
  - Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified.
  - Dispose of by: burial in a land-fill specifically licenced to accept chemical and/or pharmaceutical wastes or incineration in a licenced apparatus (after admixture with suitable combustible material).
  - Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.

Source: extract from Chemwatch

**Figure 3**

- a. Refer to Figure 3 above. The MSDS advises, ‘DO NOT allow wash water from cleaning or process equipment to enter drains’.

Explain why.

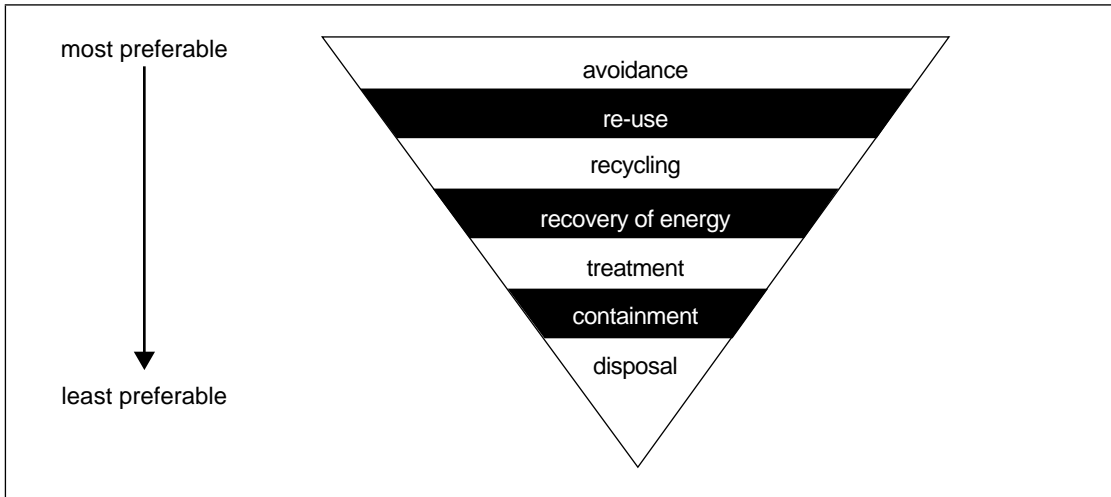
2 marks

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Source: EPA Victoria 2015

**Figure 4**

b. Refer to the waste management hierarchy in Figure 4 above.

How could 'avoidance' and 'disposal' be part of the process when using the interior polyurethane gloss product referred to in Figure 2?

2 marks

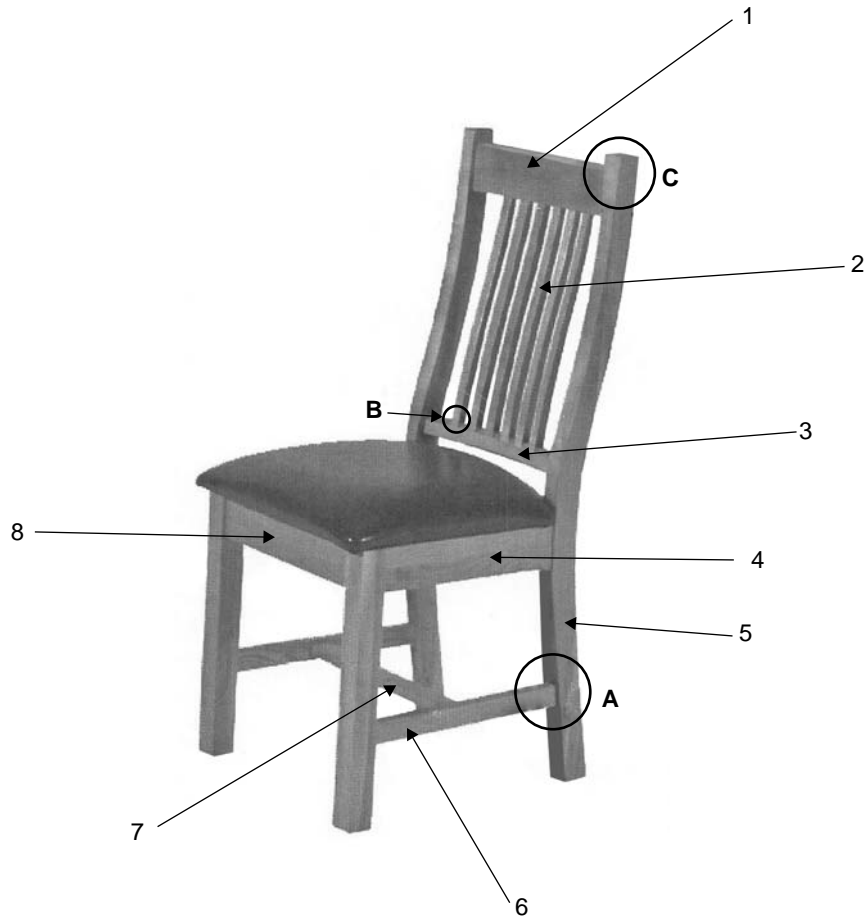
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Use Figure 5 to answer Questions 8–10.



**Figure 5**

**Question 8** (3 marks)

Figure 5 shows a chair with its components labelled 1–8.

In the table below, name the three unidentified components.

|   |                |
|---|----------------|
| 1 |                |
| 2 |                |
| 3 | middle rail    |
| 4 | side rail      |
| 5 | leg            |
| 6 | stretcher      |
| 7 |                |
| 8 | front leg rail |

**Question 9** (8 marks)

Each of the three joints labelled A, B and C in Figure 5 can be assembled using a different construction method.

Choose two of the three joints. For each of your chosen joints:

- name the joint
- explain a construction method used for the joint
- describe two main features of the construction method you have identified.

|   |    |
|---|----|
| Joint chosen (circle one):    A    B    C |    |
| Joint name _____                          |    |
| Construction method                       |    |
| Features                                  | 1. |
|   | 2. |

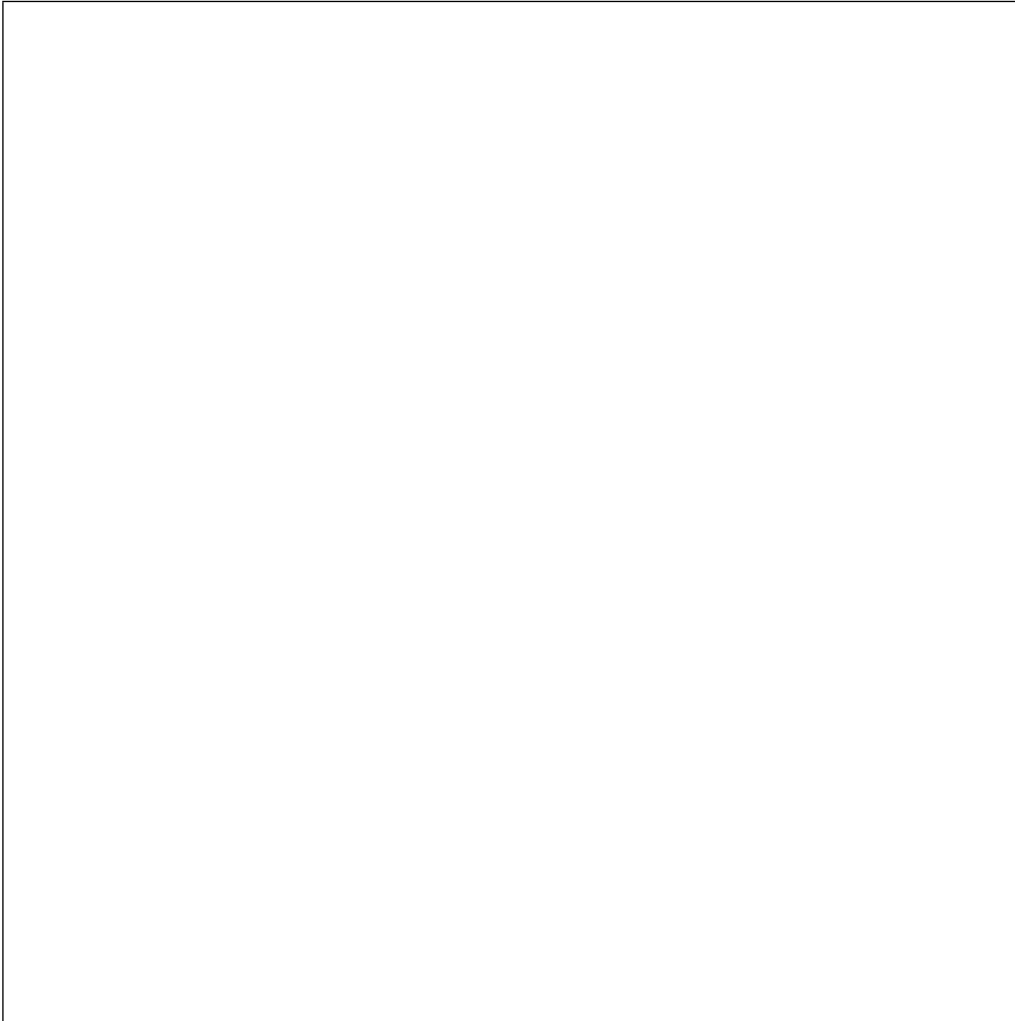
|   |    |
|---|----|
| Joint chosen (circle one):    A    B    C |    |
| Joint name _____                          |    |
| Construction method                       |    |
| Features                                  | 1. |
|   | 2. |

**Question 10** (4 marks)

Four corner blocks are required for the chair shown in Figure 5 on page 14.

Sketch the plan view of the chair. On your sketch:

- show the corner blocks on the chair
- indicate the fixing hardware needed to attach the corner blocks
- show the correct grain direction for the corner blocks
- label the depth and width of the seat frame.

**Question 11** (2 marks)

What are the two most common causes of ‘chipping of the grain’ on timber when using a surface plane?

1. \_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_



**Question 12** (4 marks)

What are four safety checks that should be performed before using a portable router?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

**Question 13** (2 marks)

What does the term 'sustainable' mean when buying timber?

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**SECTION C – Case study****Instructions for Section C**

Answer all questions in the spaces provided. Refer to the insert when answering Questions 1–7.  
Use explanatory diagrams, charts and sketches if you believe they will improve your answers.

**Question 1** (10 marks)

Complete the cutting list for each part of **one** of the bedside cabinets described in Figure 1 in the insert.

| Cutting list for bedside cabinets |                        |                  |             |            |                |                       |              |
|-----------------------------------|------------------------|------------------|-------------|------------|----------------|-----------------------|--------------|
| Item                              | Description            | Number of pieces | Length (mm) | Width (mm) | Thickness (mm) | Materials             | Instructions |
| a                                 | legs                   | 4                | 265         | 50         | 50             | black bean            |              |
| b                                 | side rails             | 2                | 280         |            | 20             | black bean            |              |
| c                                 | front/back rails       | 2                |             | 52         | 20             | black bean            |              |
| d                                 | carcase fixing cleats  | 2                | 450         | 40         | 20             | Victorian ash         |              |
| e                                 | top                    | 1                | 520         | 420        | 19             | VPB                   |              |
| f                                 | sides                  | 2                | 300         | 340        |                | VPB                   |              |
| g                                 | front pilasters        | 2                |             | 40         | 35             | black bean            |              |
| h                                 | rear pilasters         | 2                | 300         | 40         | 35             | black bean            |              |
| i                                 | back                   | 1                | 450         | 300        | 19             |                       |              |
| j                                 | drawer blades rails    | 3                | 450         | 40         | 20             | Victorian ash         |              |
| k                                 | drawer runners/kickers |                  | 365         | 40         | 20             | Victorian ash         |              |
| l                                 | drawer fronts          | 2                | 450         | 150        | 20             | black bean            |              |
| m                                 | drawer handles         | 2                | 450         |            | 10             | black bean            |              |
| n                                 | drawer sides           | 4                |             | 120        | 12             | Victorian ash         |              |
| o                                 | drawer backs           | 2                | 450         | 88         |                | Victorian ash         |              |
| p                                 | drawer bottoms         | 2                |             | 365        | 6              | Victorian ash plywood |              |
| q                                 | drawer slips           | 4                | 359         | 20         | 12             | Victorian ash         |              |

**SECTION C – continued**

**Question 2** (7 marks)

When making the bedside cabinets, Mr Smith divides the task into three sections: the leg frame, the carcass and the drawers.

Complete the work plan below for the leg frame section.

| Step | Task   | Tools/equipment                      |
|------|--|--------------------------------------|
| 1    | Dress and cut to size all materials as per cutting list. | parts as supplied by wood machinist  |
| 2    | Mark out the dowel joints as per set-out.                | pencil, ruler, square, marking gauge |
| 3    |  |                                      |
| 4    | Mark out and shape the rails.                            | band/jig saw, spoke shave, scrapers  |
| 5    |  |                                      |
| 6    | Sand all faces.  | sandpaper and blocks                 |
| 7    | Dry test assembly.                                       | clamps and clamping blocks, ruler    |
| 8    |  |                                      |
| 9    | Glue and clamp side to the front/back rails.             | clamps and clamping blocks           |
| 10   |  |                                      |

**Question 3** (2 marks)

Mr Smith uses a spoke shave to shape the legs.

Which type of spoke shave should he use to shape the concave sections of the legs? Give a reason for your answer.

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**Question 4** (2 marks)

The legs and rails of the bedside cabinets have been clamped.

List two things that must be checked before the legs and rails are left to set.

1. \_\_\_\_\_

\_\_\_\_\_

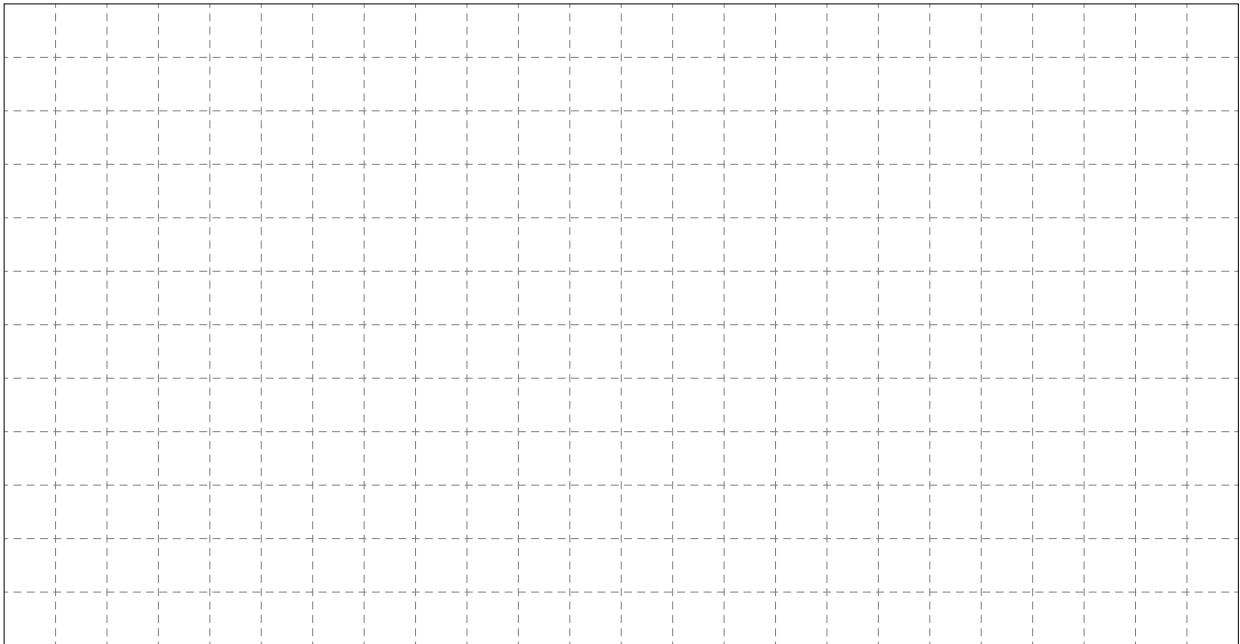
2. \_\_\_\_\_

\_\_\_\_\_

**Question 5** (5 marks)

The grid paper below represents a  $2400 \times 1200$  sheet of VPB.

Draw a cutting plan for the **two** bedside cabinets that minimises waste material. Show all VPB components on your cutting plan. Show the grain, and dimensions in mm (e.g.  $2400 \times 1200$ ).



**Question 6** (3 marks)

- a. Where on the timber drawers would Mr Smith use lapped dovetails and why? 2 marks

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- b. The bedside cabinets have been assembled and the timber drawer components need to be made and fitted.

What direction is the grain on the timber drawer front? 1 mark

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**Question 7** (6 marks)

- a. Mr Smith's client has asked him about the environmental sustainability of the materials used in the bedside cabinets.

In the table below, give one characteristic for each material. You may use each characteristic only once. 4 marks

| Material      | Characteristic |
|---------------|----------------|
| black bean    |                |
| VPB           |                |
| Victorian ash |                |
| plywood       |                |

- b. Mr Smith's client is worried that the black bean has an unacceptable environmental impact. He wants a lower-impact solution that meets the design brief for a 'dark-brown solid timber' look.

Suggest an alternative and give a reason for your answer. 2 marks

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**Insert for Section C**

Please remove from the centre of this book during reading time.

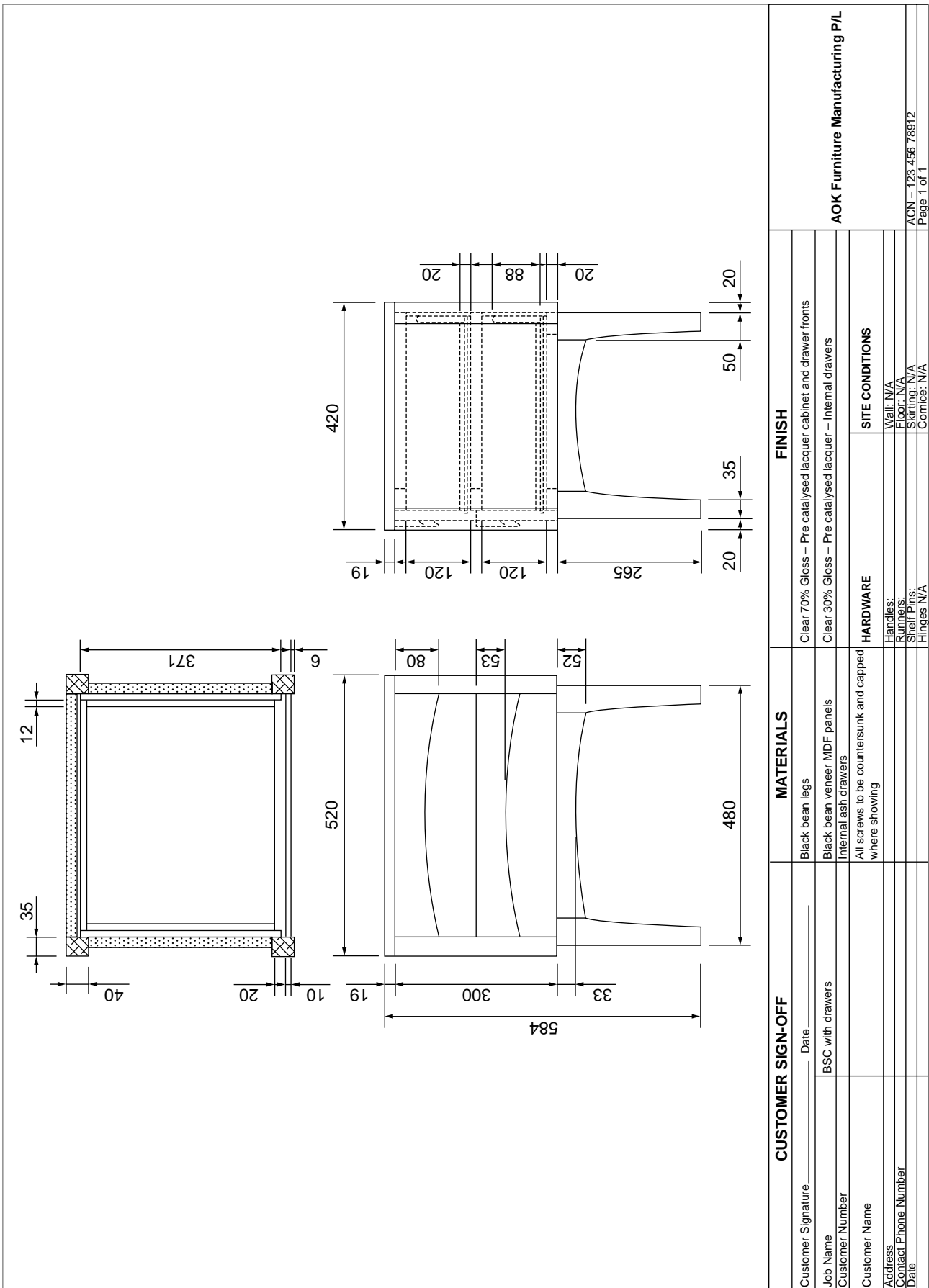


Figure 1

Mr Smith's client has requested the construction of two bedside cabinets as indicated in the drawing and specifications below.

|  |
|--|
| <b>Specifications for the bedside cabinets</b> |
|--|

Solid timber:       Black bean – external/Victorian ash – internal

Sheet material:    19 mm black bean veneered particle board (VPB)  
                          6 mm Victorian ash plywood

- carcass construction using dowels, biscuits
- leg frame to be dowelled
- drawers to be dovetailed
- drawer side and back 12 mm thick
- drawer bottoms to be 6 mm thick in 6 mm deep grooves
- drawer blades/fixing cleats 40 mm × 20 mm
- all timber to be 20 mm thick, unless drawing shows otherwise

**END OF INSERT FOR SECTION C**