

2018 VCE VET Furnishing written examination report

General comments

The questions on the 2018 VCE VET Furnishing examination assessed the underpinning knowledge of the competencies students had studied in Units 3 and 4 as part of their VCE VET Furnishing program.

Students demonstrated good knowledge of appropriate and safe use of basic hand and power tools. Questions addressing student knowledge of construction methods and their application to furniture items were generally well answered.

Students were able to describe a basic range of tools and methods, but often described the use of familiar tools or methods inappropriately. Students were able to identify correct PPE but understanding of hazards, risk and control measures was inconsistent.

Interpretation of drawings and the development of accurate cutting lists provided a challenge to most students. Questions requiring simple reading of drawings were answered well but questions involving more complex calculation and planning were poorly answered. Planning for production is an area for improvement. Careful consideration of each step was required for full marks.

Areas of strength included:

- identification of basic tools
- ability to articulate answers
- occupational health and safety

Areas of weakness included:

- application of mathematical concepts
- ability to interpret diagrams with precision
- hardware selection and construction knowledge
- generalised and basic work plans

Specific information

This report provides sample answers or an indication of what answers may have included. Unless otherwise stated, these are not intended to be exemplary or complete responses.

The statistics in this report may be subject to rounding resulting in a total more or less than 100 per cent.

Section A – Multiple-choice questions

The table below indicates the percentage of students who chose each option. The correct answer is indicated by shading.

Question	% A	% B	% C	% D	Comments
1	0	5	87	8	Before starting work, a production plan is necessary. The other items occur as part of the work.
2	12	33	33	22	A loose mortise and tenon joint: <ul style="list-style-type: none"> can be made without specialist equipment (option A) as normal woodworking tools can be used to make the joint is strong (option B) but is time consuming to make is not a traditional method (option C) will fail very quickly if assembled without glue (option D).
3	4	86	7	4	While a 50-metre tape measure (option A) could be used, it is prohibitively cumbersome. An eight-metre tape measure (option B) is industry standard.
4	26	13	25	34	The ratio 3:4:5 (option D) is used to set out a right angle using Pythagoras's theorem.
5	5	25	47	22	Overall measurements prevent errors from being duplicated or accumulating in incremental measurements. Plans may not accurately match site conditions.
6	3	4	7	87	Grain direction (option D) is a characteristic of timber but not a defect.
7	42	38	14	5	The correct moisture content for seasoned timber used in Australia is between 8% and 16% (option B).
8	21	5	72	1	90 m ² is the floor area. 15 000 mm × 6000 mm can be simplified to 15 m × 6 m = 90 m ²
9	0	7	87	7	
10	54	46	0	0	Quartersawn timber is less likely to cup as the growth rings are perpendicular to the wide face of the board.
11	9	45	28	18	Biscuit joints are used with veneered particle board. The other joints require the long grain that occurs in solid timber to have enough strength.
12	1	9	0	89	Material Safety Data Sheets (MSDS) contain information about the health and environmental hazards presented by the material.

Question	% A	% B	% C	% D	Comments
13	11	29	14	46	Chipboard screws are used for kitchen cabinets. The other screws are used for outdoor work or fixing metals.
14	93	1	4	1	Biscuit joints can be used to join timber boards for tabletops. The other joints are used for carcass joints or leg and rail joints.
15	26	22	49	3	A ratio of 1:6 is used for dovetail joints in solid timber. Ratios of 1:3 and 1:4 result in short grain causing weak joints. A ratio of 1:10 has an insufficient angle to create a tight joint.
16	4	76	3	17	An auger drill bit is too coarse and archaic, while a spade drill bit is not sufficiently accurate.
17	79	7	8	7	Concave surfaces are shaped with a spokeshave (option A). A scraper is used for final finishing and the other tools are used for flat surfaces.
18	9	30	7	54	A profile gauge (option D) is used to duplicate an existing shape. The other responses duplicate angles.
19	42	32	20	7	The ball bearing on a roundover bit guides the width of the moulding from the edge of the material.
20	63	9	12	16	Stiles are the vertical parts of a doorframe. Rails are the horizontal part of the doorframe.

Areas of strength included:

- identifying tools and processes
- simple calculations
- traditional furniture making

Areas for improvement include:

- contemporary cabinetmaking
- complex mathematical problem-solving
- timber technology
- knowledge of power tools

Section B – Short-answer questions

Areas of strength included:

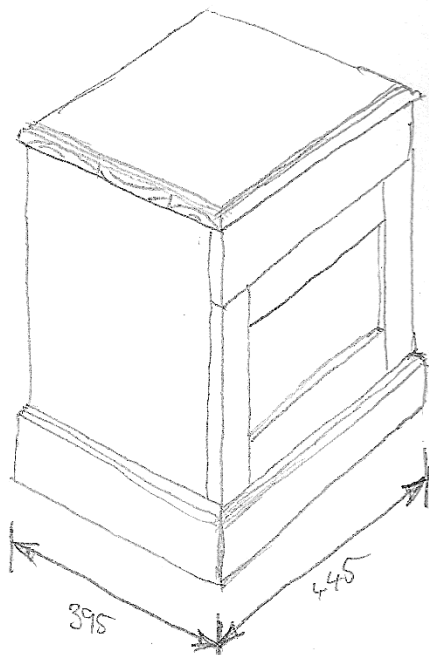
- identification of basic tools
- safe working practices

Areas for improvement included:

- application of mathematical concepts
- timber technology
- production methods

Question 1a.

Marks	0	1	2	3	4	5	Average
%	42	3	7	18	22	8	2



Students were required to complete a perspective sketch of the bedside cabinet. Marks were allocated for creating a perspective sketch, sketching the correct item, including all visible parts, showing details of grain and mouldings, including overall dimensions.

Question 1b.

Marks	0	1	2	3	Average
%	65	15	12	8	0.7

Work out the length of machining required in meters: $0.395\text{ m} + 0.445\text{ m} + 0.395\text{ m} = 1.235\text{ m}$

Add both top and plinth machining: $1.235\text{ m} \times 2 = 2.470\text{ m}$.

Multiply by \$25 per lineal meter: $2.470\text{ m} \times \$25 = \61.75

Multiply by 25 cabinets: $\$61.75 \times 25 = \1543.75

In this question, a furniture-maker was required to calculate the machining cost to run an ogee profile to three sides of the bedside cabinet top and the plinth material. The additional information provided was that machining the profile costs \$25 per lineal metre. Students were required to calculate the total cost to machine the ogee profile for 25 cabinets, and to show their working.

Question 1c.

Marks	0	1	2	Average
%	58	1	41	0.9

This question could not be solved using a square metre calculation. To get the correct answer, students needed to divide the length and width of the load tray by the length and width of the cabinets, remembering that only a whole cabinet could be delivered.

$1.8 \div 0.445$ (or 0.395) = 4 (whole number only)

$1.4 \div 0.445$ (or 0.395) = 3 (whole number only)

$3 \times 4 = 12$ cabinets

Question 1d.

Marks	0	1	2	Average
%	41	41	18	0.8

To prevent damage to slotted brass screws during construction, steel screws are fitted until the final fitting up of the cabinet with brass screws. Using the correct well-fitting screwdriver and drilling pilot holes will assist in preventing damage to the brass screws.

Question 1e.

Marks	0	1	2	Average
%	44	36	20	0.8

Two of:

- attractive figure/for quality appearance of timber/grain quality
- less costly than quarter-sawn timber
- availability of wide boards

This question assessed students' ability to undertake a basic furniture-making project. They were informed that back-sawn timber was used for the bedside cabinet top and were then required to give two reasons why back-sawn timber is used.

Question 1f.

Marks	0	1	2	Average
%	51	13	36	0.9

Correct methods were those that allow for timber movement and are not seen on the top surface. For example, cleats and slotted screw holes, table buttons in slots, figure eights. Methods that included gluing the top to the carcass were incorrect.

Students were asked to describe one method of fixing the solid timber top to the carcass of the bedside cabinet.

Question 2

Marks	0	1	2	Average
%	31	63	7	0.8

- Sight across the door stiles to check the door is flat.
- Measure from one corner diagonally to the other corner and then compare that distance to the opposite diagonal measurement. The two distances are equal when the door is square.

This question assessed students' ability to assemble furnishing components. Students were required to explain how to check that a doorframe is square when gluing up.

Question 3

Marks	0	1	2	3	4	5	6	7	8	Average
%	3	5	15	11	24	7	23	13	0	4.3

1. Tool: spokeshave, Task: shaping timber, shaping curves

2. Tool: sliding bevel, Task: transferring angles, marking angles, checking angles, marking out joints

3. Tool: combination square, Task: checking or marking square/45°, marking parallel to an edge, marking out joints

4. Tool – brad awl, Task: making screw holes, marking out

For this question, students were required to identify images of tools and then to list one task for which each tool could be used.

Question 4

Marks	0	1	2	3	4	Average
%	1	14	43	31	11	2.4

Any four of:

- use a face shield
- fit guards to the router
- use an extraction system
- use the correct position/stance
- use the correct routing technique
- ensure work piece is firmly secure and supported
- router bit must be sharp and in sound condition.

This question required students to list four risk control measures taken to eliminate or to minimise the risk of chips and material flying into an operator’s face, when the operator is using a portable router.

Question 5

Marks	0	1	2	Average
%	85	8	7	0.2

- flat surface that connects two other surfaces. Usually at 45°
- tabletops, bottom of legs to prevent chipping

Students were required to indicate what a chamfer is and where is it most likely to be located in furniture-making.

Question 6

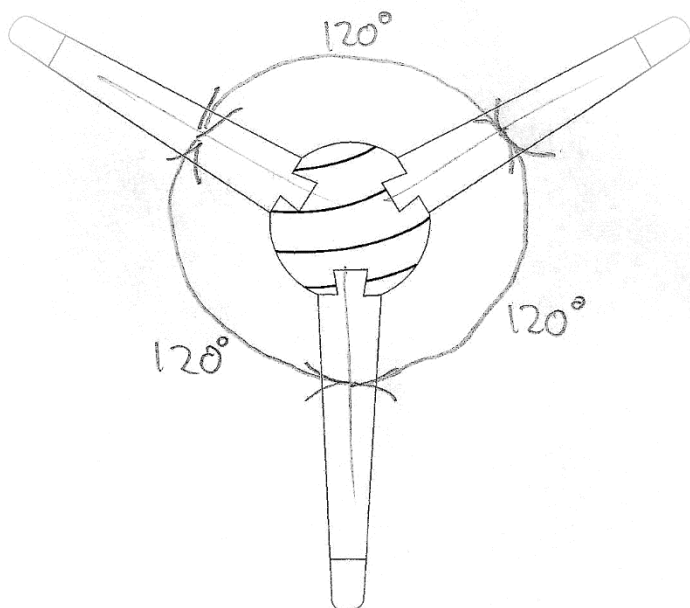
Marks	0	1	2	Average
%	7	63	31	1.3

- Poor construction technique – timber not straight, joint not at 90°, timber incorrect dimensions
- Poor gluing technique – no check completed after clamping, job not flat, squareness not checked using the correct method, clamps too tight/not tight enough

Students were required to answer what the two most common causes of a twist or a wind in a timber drawer are when gluing.

Question 7

Marks	0	1	2	Average
%	28	0	72	1.5



$360 \text{ degrees} \div 3 = 120 \text{ degrees}$

Students were provided with the image of the base of a standard lamp with three legs, equally spaced, and dovetailed into the centre post. They were then required to calculate the spacing between each leg.

Question 8

Marks	0	1	2	Average
%	41	49	10	0.7

- Do not operate the machine, check with the tag fixer.
- Have the item repaired and the tag removed by the person who fitted the tag.

Students were provided with two images of a sander with the tag attached to it. They were then asked what its operator must do before using the sander.

Question 9

Marks	0	1	2	Average
%	64	3	33	0.7

- foot stool
- upholstered foot stool
- foot rest

Students were asked to describe the furnishing product known as an 'ottoman'.

Section C – Case study

Section C – Case study considered the construction of a writing desk. This is a complex furniture item including doors, drawers, glass and a drop-down desk. A range of hardware is required to complete the cabinet.

Students were able to confidently read dimensions from the drawing provided but showed less ability to derive the correct measurements when calculations were required. The completion of the job plan was challenging for many students, with insufficient detail and jumbled processes being common.

Question 1

Marks	0	1	2	3	4	5	6	7	Average
%	3	16	7	14	17	22	21	0	3.8

Cutting list							
Item No.	Item name	No. of pieces	Length (mm)	Width (mm)	Thickness (mm)	Remarks	Material
1	top and bottom panels	2	1016	274	22		Vic. ash
2	sides	2	1345	280	20		Vic. ash
3	division	1	1003	274	25		Vic. ash
4	horizontal division below drop-down desk	1	582	274	20	refer to specifications on division below drop-down desk	Vic. ash
5	horizontal divisions above and below bottom drawer	2	582	274	25		Vic. ash
6	bottom drawer division guides	2	274	90	20		Vic. ash
7	shelves	3	409	250	12		Vic. ash
8	shelf supports	6	250	16	20	cut on angle at front	Vic. ash
9	desk shelving	1	2448	140	6	cut lengths to size	Vic. ash
10	back	1	1364	1044	6		plywood
11	top back	1	1016	140	20	fixed to top using biscuit joints	Vic. ash
12	back top moulding	1	1094	60	25	18 mm chamfer	Vic. ash
13	side top moulding	2	310	60	25	18 mm chamfer	Vic. ash
14	right door top rail	1	292	83	20	rebate on door edge to set door into carcass 3 mm x 14 mm depth	Vic. ash
15	right door bottom rail	1	292	107	20	rebate on door edge to set door into carcass 3 mm x 14 mm depth	Vic. ash
16	right door stiles	2	1009	60	20	rebate on door edge to set door into carcass 3 mm x 14 mm depth	Vic. ash

17	small doors top and bottom rails	4	164	60	20	rebate on door edge to set door into carcase 3 mm x 14 mm depth	Vic. ash
18	small door stiles	4	419	60	20	rebate on door edge to set door into carcase 3 mm x 14 mm depth	Vic. ash

Question 2

Marks	0	1	2	3	4	5	6	7	8	9	10	Average
%	7	10	12	18	18	16	13	6	1	0	0	3.7

Section	Step	Tools/equipment required
preparation	Select and dress timber.	tape measure, docking saw jointer and thicknesser
carcase	Mark out and make widening joints.	pencil, ruler, tape measure, biscuit cutter, extractor, PPE, clamps, glue
	Dress and cut to size sides, top, bottom, division and shelves.	hand plane, wide belt/drum sander or thicknesser, panel saw, ruler, tape measure, pencil, PPE
	Mark out and make carcass joints.	tape measure, marking equipment, biscuit jointer and extractor
	Run rebates for back.	router, rebate cutter and extractor
	Dry run carcass assembly.	clamps, clamping blocks and tape measure
	Sand internal faces of carcass parts.	sandpaper and sanding block
	Glue carcass and check for square.	glue, clamps, clamping blocks, tape measure, rags
	Check for square and fit back.	tape measure, drills, driver and screws
	Run crown moulding.	router, extractor and bevel bit
	Fit crown moulding.	mitre saw, tape measure, drills, driver, glue screws, rags
	Make and fit leg brackets.	jigsaw/band saw, spokeshave, sanding bobbin, horizontal borer, drills, glue, clamps, rags
internal shelving behind drop-down desk	Measure and cut to size internal shelves.	tape measure, marking equipment and docking saw
	Mark out and make housing joints.	tape measure, marking equipment, router and extractor
	Sand all internal shelf parts.	sandpaper and sanding block
	Dry run and check.	clamps, clamping blocks and tape measure

	Glue shelves and check for square.	glue, clamps, clamping blocks, tape measure and rags
	Insert and fix shelf unit into carcass.	biscuits, glue, clamps, rags
drawers	Measure and cut to size drawer parts.	tape measure, marking equipment and docking saw
	Fit drawer parts to carcass.	hand plane
	Make drawer joints.	router, rebate cutter and extractor
	Dry run and check fit of drawers.	clamps, clamping blocks and tape measure
	Glue and check for square and wind.	glue, clamps, clamping blocks, tape measure and rags
	Fit drawer bottoms.	hammer and flathead nails/screws and screwdriver

Question 3a.

Marks	0	1	2	3	Average
%	54	0	9	38	1.3

Joint: mortise and tenon or dowels

Reason 1: simple to construct

Reason 2: has strength and is accurate

Students were required to list one handmade joint that can be used to construct the doorframe. They were then required to provide two reasons for using this joint.

Question 3b.

Marks	0	1	Average
%	21	79	0.8

In line with, in the same plane, coplanar

Students were given a scenario that the supports for the drop-down section of the writing desk need to be flush with the front face of the carcass. They were then asked what the term 'flush' means.

Question 3c.

Marks	0	1	Average
%	16	84	0.9

three

Students were asked how many shelves were behind the glass door of the writing desk.

Question 3d.

Marks	0	1	2	Average
%	96	4	0	0.1

Length: 829 mm

Width: 312 mm

Students were required to determine the length and the width of the leadlight panel in the door of the writing desk door.

Question 3e.

Marks	0	1	2	Average
%	47	46	7	0.6

Tool: a router/trimmer

Radius: 6 mm radius

Students were given the information that the desk doors and the drawers had a pencil round on the front outside edge. They were then required to determine which tool was used to make the pencil round and what the radius of the pencil round was.

Question 3f.

Marks	0	1	Average
%	34	66	0.7

180–320 grit

Question 3g.

Marks	0	1	Average
%	33	67	0.7

A cutting list

Question 3h.

Marks	0	1	2	3	Average
%	35	9	38	18	1.4

Grain direction: horizontal/grain running side to side

Reason 1: visually appealing/to match with the style of doors/finish appearance

Reason 2: strength of the joints

Question 3i.

Marks	0	1	Average
%	39	61	0.6

At the finish, after it has been made, sanded and polished

Question 3j.

Marks	0	1	Average
%	96	4	0.1

In line with the rails or set in the length of a hinge from the edge of the door

Question 4

Marks	0	1	2	3	4	5	6	7	Average
%	7	4	16	23	21	21	8	1	3.5

For this question, students were required to complete the hardware list below by filling in the missing information.

Number	Item description	Finish	Size	Quantity
1	teardrop handles for doors	antique bronze	100 mm	3
2	teardrop handles for drawers	antique bronze	to match doors	1
3	knobs for drop-down desk supports	antique bronze	18 mm diameter	2
4	lock for drop-down desk	brass	50 mm	1
5	escutcheon for drop-down desk	brass	to match key	1
6	locks for doors	brass	50 mm	3
7	screws to fit back	brass	19 mm × 6 gauge	8
8	butt hinges	brass	50mm	8
9	hinge screws	brass	19 mm × 6 gauge	48
10	brads for fitting glass beading	steel	19 mm	100
11	screws for shelf supports	brass	32 mm × 8 gauge	18