2017 VCE VET Furnishing examination report

General comments

The 2017 VCE VET Furnishing examination assessed students' underpinning knowledge of the competencies they had undertaken in Units 3 and 4 as part of the VCE VET Furnishing program.

Students demonstrated good knowledge of the 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. Outside of the basic range of tools and methods, students did not give the correct response as well, often attempting to use familiar tools or methods inappropriately. Students were able to identify correct personal protective equipment (PPE) but their understanding of hazards, risk and control measures was inconsistent. Interpretation of drawings and development of accurate cutting lists provided a challenge to most students, with questions requiring simple reading of drawings answered well but questions requiring more complex calculations and planning were not answered well.

Areas of strength in 2017 included:

- calculations
- identification of joints
- knowledge of construction methods
- knowledge of safe working methods.

Areas of weakness in 2017 included:

- completion of cutting list and costing
- planning of production.

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

Question	% A	% B	% C	% D	% No answer	Comments
1	31	11	13	46	0	A no. 5 jack plane is the correct tool for achieving a flat surface. The other planes are either too short to give a flat surface or only appropriate for specialist tasks.

Question	% A	% B	% C	% D	% No answer	Comments
2	0	4	56	39	1	The cost of MDF, like that of other manufactured boards, is calculated using square metres. Lineal metres are used for calculation of the cost of solid timber.
3	12	71	0	18	0	Cutting lists are used for recording and communicating the sizes of timber cabinet parts. The other documents in the options are used for communicating other information.
4	32	2	27	38	1	Dowels should always be at 90 degrees to the joint surface to allow for assembly of the joint and for full penetration. This is vital when making furniture with angled joints.
5	76	8	13	2	0	A lathe is used to make cylindrical chair parts.
6	14	40	2	44	0	The cap iron reduces surface chip-out by curling the shaving as it is produced. The blade and lever provide lateral adjustment and the thumb screw is used by adjusting the depth of cut.
7	21	4	68	7	0	A 300 mm steel rule is used for checking the router set-up. The other tools are too big or lack measurements.
8	49	9	21	20	0	Drawer fronts should be attached with screws from the inside of the drawer. This allows for accurate positioning, for efficient assembly and for natural timber shrinkage when using in solid timber fronts.
9	32	19	22	27	0	Drawer kickers are fitted parallel to the runners above the drawer to prevent the drawer from tilting downwards as it is opened.
10	44	53	4	0	0	A safe operating procedures document outlines a step-by-step method to perform a workplace activity safely. A Material Safety Data Sheet (MSDS) provides hazard and safe handling information for a product.
11	58	16	22	2	1	1213 mm is the overall height. Tank height + kicker + door + recommended spacing + top = overall height. So, 457 mm + 100 mm + 620 mm + 4 mm + 32 mm = 1213 mm. Many students did not include the spacing for the doors.

Question	% A	% B	% C	% D	% No answer	Comments
12	4	36	54	5	1	A brad hammer is used for attaching the back of the cabinet.
13	49	33	7	11	0	A low-angle block plane blade must be fitted with the bevelled side up, as the blade angle of 12.5° is less than the grinding angle of 25°.
14	28	7	54	11	0	Rough sawn timber must be larger than the finished dressed all round (DAR) size of 42 mm × 18 mm. This makes 50 mm × 25 mm the most economical size.
15	0	4	93	4	0	Millimetres are used for all measurements in furniture and cabinetmaking. Centimetres and metres do not meet the accuracy standards required.
16	2	1	24	73	0	It is vital that glue is applied to both the dowel holes and the face of the joint.
17	1	0	0	99	0	Dry clamping refers to assembly without glue to ensure all joints fit neatly and all equipment is prepared.
18	1	58	35	6	0	Biscuit joints are not suitable for chair construction. Biscuit joints are suitable for widening joints and carcase assembly joints.
19	5	75	18	2	0	Diagonal measurements are the most accurate and simple method of checking for square.
20	4	69	7	19	1	Australian standards describe minimum quality standards for products used in Australia.

Section B – Short-answer questions

Question 1

Marks	0	1	2	3	4	Average
%	1	11	13	44	32	**3**

1. dovetail joint (box joint and through tenon were also accepted)
2. mortise and tenon joint (sash, through, haunched)
3. dowel joint
4. mitre joint

Question 2

Marks	0	1	2	Average
%	26	21	53	1.3

Location: between the legs, below the seat

Purpose: to strengthen the chair and to provide support to the legs

Question 3

Marks	0	1	2	3	4	Average
%	2	5	25	8	60	3.2

Any two of the following joints can be used for leg and rail construction.

- Joint 1: dowel joint
  Advantage: relatively strong, easy to make, requires simple tools
- Joint 2: mortise and tenon joint
  Advantage: strong and can be made with simple tools, high status, attractive appearance
- Joint 3: loose tenon joint
  Advantage: relatively strong, fast to make

Mitre joints, biscuit joints, butt joints and knockdown joints were not acceptable answers.

Question 4

Marks	0	1	2	Average
%	5	67	28	1.3

JSA: Job Safety Analysis

PPE: Personal Protective Equipment

Question 5

Marks	0	1	2	3	4	Average
%	22	20	12	14	33	2.2

- Step 1: grinding
  Equipment: grinder
- Step 2: honing
  Equipment: sharpening stone, lubricant, strop

To gain full marks for this question, students had to provide both steps, in the correct order, and the equipment used. Many students identified only part of the information required.

Question 6

Marks	0	1	2	3	Average
%	2	4	39	56	2.5

Any items from these classes of PPE:

- eye protection: safety glasses, goggles, face shield
- hearing protection: earplugs or earmuffs
- protective clothing: apron, overalls, gloves
- protective footwear: boots, safety shoes.

Students who provided multiple items from the same class of PPE were not awarded additional marks.

Question 7

Marks	0	1	2	3	4	5	6	Average
%	8	5	12	19	11	16	30	**3.9**

Any two of:

- Hazard 1: high-level noise
  Risk: hearing damage
  Control: PPE (hearing protection)
- Hazard 2: flying sparks, grit, swarf
  Risk: eye damage
  Control: PPE (eye protection)
- Hazard 3: sharp tools
  Risk: lacerations
  Control: PPE (protective clothing, i.e. gloves)
- Hazard 4: disintegration of grinding stone
  Risk: high-speed impact injuries
  Control: engineering controls (installing guards and enclosing the grinding stone), administrative controls (checking machine and condition of stone before using)
- Hazard 5: electrical hazards
  Risk: electrocution
  Control: administrative controls (checking tag before operation, visual check for damage before operation)

Students who identified two hazards present when grinding tools and who could link the hazard to reasonable risks and control measures were awarded full marks.

Question 8

Marks	0	1	Average
%	47	53	**0.6**

The laminate required for the benchtop is 1.608 m^2 (2680 mm × 600 mm). Correct position of the decimal point was necessary to be awarded full marks. An allowance for trimming could be included in the total area.

Question 9

Marks	0	1	2	Average
%	30	38	32	**1**

Any two of:

- clamps being uneven or being over- or undertightened
- timber or joints being out of square
- door not having been checked prior to the glue drying.

Question 10

Marks	0	1	2	Average
%	50	38	11	**0.6**

Any two of:

- using a block plane or plane
- using a chisel, knife, plane blade or laminate trimmer
- using a trimmer or router with flush trim bit.

Question 11

Marks	0	1	2	3	4	Average
%	18	7	4	14	57	**2.9**

- name of the drawing
- drawing number
- name of the draftsperson
- date drawn or printed
- file name
- paper size
- scale
- client name
- sheet number

To gain full marks, students had to identify four details from a title block. Dimensions and views of the job are not part of the title block.

Question 12

Marks	0	1	Average
%	27	73	**0.8**

The length of the rail is 310 mm (62 mm × 5 mm).

Question 13a.

Marks	0	1	Average
%	59	41	**0.4**

Australian Business Number

Question 13b.

Marks	0	1	Average
%	15	85	**0.9**

$9.20

Question 13c.

Marks	0	1	Average
%	17	83	**0.9**

$101.20

Question 13d.

Marks	0	1	2	Average
%	34	6	60	**1.3**

$113.00 – an additional TCT saw blade 60 teeth adds $21.00 to the existing subtotal of $92.00

Question 14

Marks	0	1	2	3	4	5	6	7	8	9	10	Average
%	24	7	15	9	8	2	1	30	0	0	2	3.5

Item no.	Part of product	No. of pieces	L (mm)	W (mm)	T (mm)	Type of material	Total lineal metres	Cost per lineal metre	Total
1	legs	4	580	45	45	Victorian ash	2.32	$ 6.99	$ 16.22
2	front and back rails	2	470	75	19	Victorian ash	0.94	$ 6.99	$ 6.57
3	side rails	2	370	75	19	Victorian ash	0.74	$ 6.99	$ 5.17
4	top	1	600	500	22	Victorian ash	1.8	$ 20.96	$ 37.73
								Total $	$ 65.69

Items 1, 2 and 3 were generally completed well. Item 4 required students to identify the material required (Victorian Ash, 190 × 32, at $20.96 per lineal metre) and calculate the total lineal metres required to make a 600 mm wide top (3 @ 600 mm × 190 mm × 32 mm = 1.8 lineal metres).

Section C – Case study

Question 1

Marks	0	1	2	3	4	5	6	Average
%	8	11	19	18	31	13	0	2.9

- Item no. 2: length of legs is 738 mm (= 760 mm overall height – 22 mm tabletop thickness).
- Item no. 4: width of back rail is 140 mm (dimension shown on side elevation and drawer frame detail).
- Item no. 6: length of drawer runners is 263 mm (= 420 mm tabletop width – 45 mm front overhang – 20 mm drawer front thickness – 45 mm blade rail width – 20 mm back rail thickness – 5 mm back rail set-in – 22 mm back overhang).
- Item no. 9: two drawer sides are required.
- Item no. 12: length of drawer slips is 302 mm (= 315 mm length of drawer side – 13 mm 2/3 thickness of drawer front). Also acceptable is 303 mm (= 315 mm length of drawer side – 12 mm thickness of drawer side).
- Item no. 15: width of side panels is140 mm (dimension shown on side elevation).

Six correct measurements were necessary for full marks.

Question 2

Marks	0	1	2	3	4	5	6	Average
%	4	3	16	31	33	12	2	**3.3**

From top to bottom, the missing steps in the table were:

- Dry run and glue up end frames and long rails. Check for square and wind. Remove excess glue.
- Apply hand-rubbed oil finish.

From top to bottom, the missing tools/equipment in the table were:

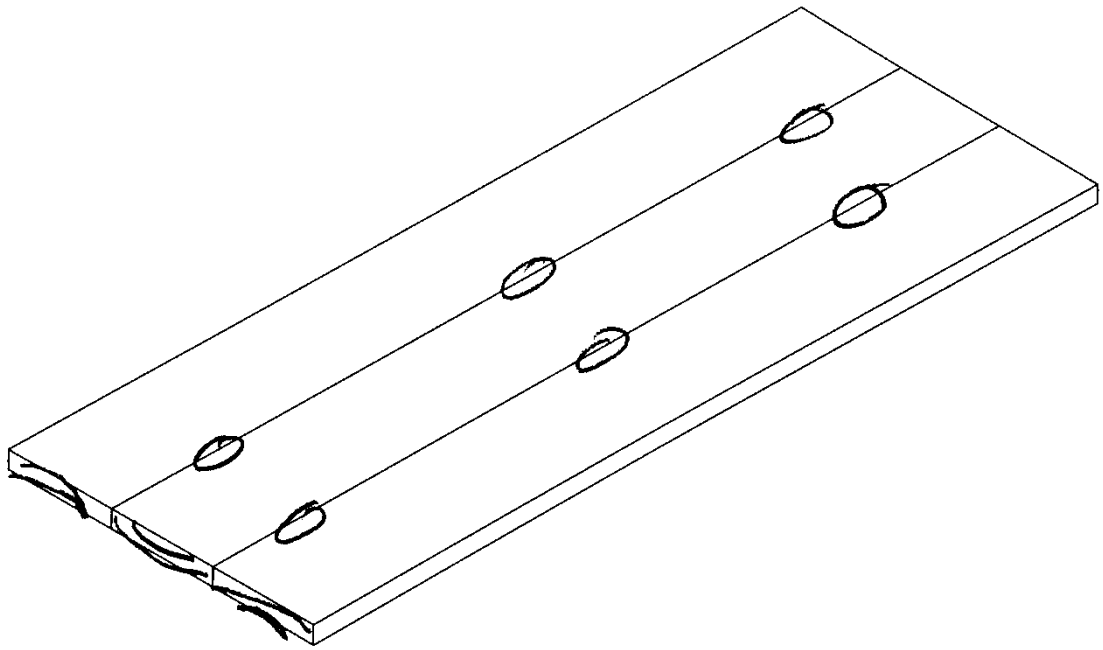
- pencil, ruler and marking gauge
- spokeshave, sandpaper and sanding block
- smoothing or jack plane
- jigsaw, router and template, sandpaper and sanding block.

To achieve full marks students had to identify steps that matched both the drawing and specification given. In many student responses, the step given did not meet these requirements. Often the tools and equipment were only partially complete.

Question 3

Marks	0	1	2	Average
%	12	36	52	**1.4**

Between three and six biscuits are required for a tabletop of 1100 mm long. The growth rings needed to be shown alternating from board to board.



Question 4

Marks	0	1	2	Average
%	25	13	62	**1.4**

- Joint: dowel, mortise and tenon
- Reason: strong, simple to make, appearance

Question 5

Marks	0	1	Average
%	26	74	**0.8**

Lapped dovetails are used for drawer construction due to their appearance and strength in the direction of the drawer motion.

Question 6

Marks	0	1	2	Average
%	50	3	47	**1**

- Power tool: jigsaw, router
- Reason: cuts curved shapes; can be used with a template to shape the top

Many students offered static machines in their responses but the question called for a power tool, not a static machine, due to the size of the top.

Question 7

Marks	0	1	Average
%	55	45	**0.5**

To achieve a mark for this question, students had to identify a hand tool that can be used for shaping concave and convex curves. The correct response was: spokeshave or compass plane.

Question 8

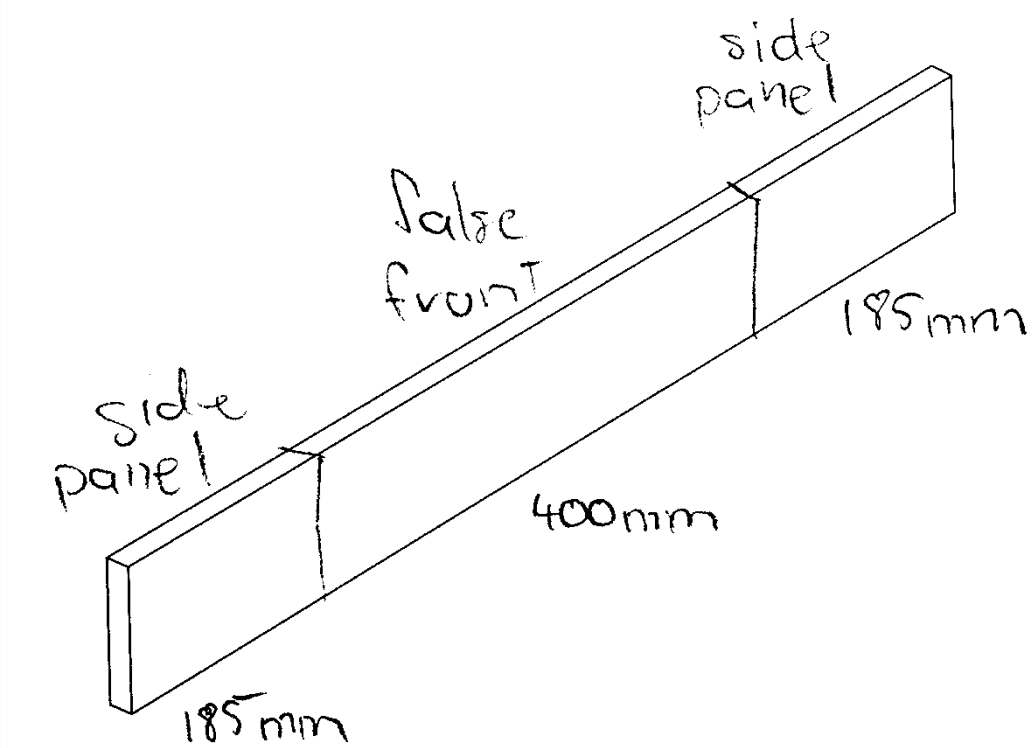
Marks	0	1	2	Average
%	26	37	37	**1.1**

1. planning other tasks whilst glue is curing
2. preparing materials, the workspace and tools/equipment.

Question 9

Marks	0	1	Average
%	83	17	0.2

When preparing the timber for the false front and side panels, a single piece of timber is cut into three segments that will preserve the grain pattern in the completed hall table.



Question 10

Marks	0	1	Average
%	48	52	0.5

Face marks are used to identify the best face, or the face used as a reference for making joints.

Question 11

Marks	0	1	Average
%	35	65	0.7

Revision note 2 indicated that the dowel location was changed due to an intersection with the loose tenons.

Question 12

Marks	0	1	Average
%	38	62	0.6

An MSDS must be provided by the supplier of the product (i.e. manufacturer or wholesaler or retailer).

Question 13

Marks	0	1	2	Average
%	11	60	30	**1.2**

After clamping the hall table side rails and legs, the excess glue must be removed and checks for square and wind must be completed.

Question 14

Marks	0	1	Average
%	31	69	**0.7**

Abrasive grits, for example, 150 could be used to sand the hall table prior to applying the oil. finish.

Question 15

Marks	0	1	Average
%	39	61	**0.6**

Either of:

- to allow excess glue and air to escape form the dowel holes
- to increase the gluing surface of the dowel, which increases the strength of the joint.