2015 VCE VET Furnishing examination report

General comments

The 2015 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.

Areas of strength in 2015 included:

- completing a cutting list accurately
- extracting data accurately from a Material Safety Data Sheet (MSDS)
- hardware selection and construction knowledge
- safety considerations and knowledge of where hazards can occur.

Areas of weakness in 2015 included:

- work plans – these were often too generalised and undeveloped
- lack of ability in describing information when using diagrams; for example, cutting plans
- paying attention to the key words in the question and responding to them
- general weakness in articulating answers
- knowledge of hand tools.

When preparing for the VET Furnishing examination, teachers and students are advised to revisit relevant questions from past examinations and examination reports as this will help students to gain a better understanding of the kinds of answers required for this examination.

Specific information

Note: Student responses reproduced in this report have not been corrected for grammar, spelling or factual 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	5	16	3	75	0	This question assessed students' knowledge of the properties of timber. The correct response was option D, high strength-to-weight ratio. A chair does not get thrown around, so option A (high impact resistance) was not a considered answer. Options B and C were simple descriptions of timber.
2	7	20	25	48	0	The correct response was option D, general purpose polyvinyl acetate (PVA), as this is the most readily available adhesive among the given options. It has good bonding properties and is also available in a water resistant form. It is also easy to clean up after cramping. Hot hide glue (option A) would go off before the leg and rail frame was assembled. Two-part epoxy resin (option B) is generally used for filling cracks and holes in wood (e.g. knots, etc.), and (option C) single-part polyurethane is a strong adhesive but it can be messy, blister and bubble and difficult to clean up after cramping.
3	8	16	69	7	0	Sanding grits of 80 (option A), 120 (option B) and 150 (option D) are normally used in sanding timber in various stages of the construction process. However, where finishing is concerned, 240 grit (option C) and higher is used.
4	26	70	3	0	1	Options A, C and D were incorrect as glue blush cannot be successfully covered. Glue is not present when sanding a job, and using small amounts of glue does not guarantee the chair strength in the construction.
5	2	2	93	2	0	Students were required to identify the function of stretcher rails. The correct response was option C, that they are used to strengthen the legs. All other options related to design/decorative criteria.
6	28	13	46	11	2	The correct response was option C, a chamfer is a bevelled edge connecting two surfaces. The other responses were a lathe or timber bead (option A), door stile (option B) and pilaster or leg (option D).
7	26	69	3	2	0	Option B (length, width, number of pieces) was correct as there may be more than one sheet required.
8	12	25	48	15	0	The correct response was option C, 2.88, as 2.4 metres × 1.2 metres = 2.88 m^2
9	61	27	6	7	0	
10	98	0	1	2	0	

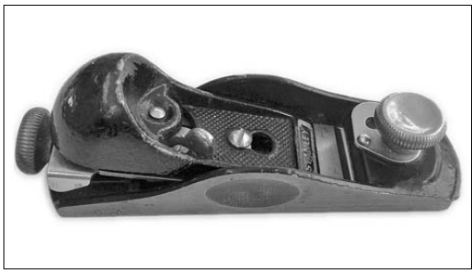
Question	% A	% B	% C	% D	% No Answer	Comments
11	1	2	1	96	0	
12	7	64	26	3	0	The answer was option B, must be shown as separate items. All items are dictated by their title and the number off (or number of pieces), by name and length x width x thickness.
13	15	2	66	16	0	The correct angle for sharpening a jack plane blade is between 25° and 30° (option C). At less than 25 degrees (option A) a difficulty is provided in achieving shavings. At more than 30 degrees the difficulty is in retaining sharpness in the tool.
14	53	23	11	12	1	Options A, B and C were types of timber and/or grain structures. Surface checks (option D) are splits in the timber usually along the grain, which is an obvious defect.
15	48	40	6	6	0	Option A (1:3) was incorrect as it can easily break along the grain, and options C and D were too steep and would not be strong enough to attain a strong fix.
16	7	39	42	11	0	
17	75	9	11	5	0	When used in timber, a countersink bit is used to provide a V-shaped opening so that the screw finishes flush to the timber surface. Option B, self-tapping screws, are screws used in metal fixing situations, these and pan-head screws (option C) are generally used to fix hardware or where the application is decorative. They can also have a self-drilling tip to enable fixing to metal. Tek screws (option D) are also used where metal fixing is required and have a self-drilling tip to enable fixing to metal.
18	4	0	7	89	0	Option D, the Material Safety Data Sheet (MSDS), was correct. The other options were overriding safety considerations and/or a statement on how building is carried out, according to regulations.
19	50	29	13	8	0	The most appropriate drill bit to use when constructing a dowelled leg and rail joint was option A, a brad-point drill bit. Option B, a masonry drill bit, is used in concrete and brick, usually in conjunction with a hammer action drill. Option C, an auger drill bit, is used in conjunction with a brace to drill a hole for a particular purpose; for example, drill through timber to insert a path for electrical wiring, or similar. Option D, a spade drill bit, is a more modern type of bit generally used to counterbore a hole so that the fixing (screw) finishes below the surface.

Question	% A	% B	% C	% D	% No Answer	Comments
20	52	0	2	46	0	The correct response was option A, to indicate that the tool has been tested for electrical faults. This is relevant when using power tools for a period of 6 months before retesting. A licenced person attaches a tag to indicate that the tool is safe to use after the test is completed.

Section B – Short-answer questions

Question 1

Marks	0	1	2	3	4	5	6	Average
%	24	18	32	15	9	1	1	**1.7**



Name of tool: low-angle block plane, block plane

Task: final finishing work, end grain, removing sharp edges, veneer work

Name of tool: cabinet scraper

Task: surface finishing, finishing difficult grain; for example, cross grain, flushing widening joints

Name of tool: dovetail saw, gent's saw

Task: fine cutting of joints or where fine work cuts are required, e.g. dovetails

This question was not answered well as students generally were not specific in naming the tools or describing a task for each correctly. For example, the cabinet scraper was often called a spokeshave; the block plane and dovetail saw were often called a different plane or saw.

Question 2

Marks	0	1	2	Average
%	18	16	67	**1.5**

FSC timber veneer is non-hazardous as per Australian Dangerous Goods Code (ADG) but a low level of rating still requires caution as per safety (see MSDS) when using formaldehyde – i.e. dust, and possible fume control required. When FSC timber veneer is used in conjunction with urea formaldehyde on a board product – for example, MDF – and the resultant product is sanded, then it may contravene the ADG Code for dust emissions and fume control. On its own, FSC timber veneer is not dangerous or hazardous.

Question 3

Marks	0	1	2	Average
%	1	2	97	**2**

Flammability: low = 1, approximately 1.5

Toxicity: minimum/nil = 0, approximately 0.5

Question 4

Marks	0	1	2	3	4	Average
%	8	1	0	0	91	**3.7**

Any four of the following were acceptable:

- wood particles
- urea formaldehyde resin
- paraffin wax
- stain
- residual bonding reactants.

Question 5

Marks	0	1	2	Average
%	6	1	93	**1.9**

Any two of the following were acceptable:

- polyethylene
- polypropylene
- packing as recommended by the manufacturer, i.e. the original containers.

Question 6

Marks	0	1	2	Average
%	45	38	17	0.7

- No, this is not a suitable location. Physical separation of the emission source from the workers may only be partially attended to as the workplace is not physically or completely controlled, even allowing for the area being open to the elements on one side.
- The required ventilation of 'adding' and 'removing' may not be present, i.e. no extraction/fume control. The space described is rather confined. This is per MSDS product use.

Question 7a.

Marks	0	1	2	Average
%	17	54	29	1.2

Wash water in the cleaning process could pick up chemicals and contaminants that are potentially harmful to the environment. Both storm water and sewerage systems are not designed to dispose of harmful solutions.

Question 7b.

Marks	0	1	2	Average
%	53	29	18	0.7

Avoidance: use a more environmentally sound product, with a similar finish, less damage to the environment; use less toxic materials to avoid contamination to the worker and the environment.

Disposal: use steps to ensure that substances are disposed of safely. Refer to the MSDS regarding disposal and local regulations in place.

Question 8

Marks	0	1	2	3	Average
%	9	28	39	24	1.8

1	top rail, top back rail, crest rail
2	back slat(s)
3	*middle rail*
4	*side rail*
5	*leg*
6	*stretcher*
7	cross stretcher rail, stretcher rail
8	*front leg rail*

Question 9

Marks	0	1	2	3	4	5	6	7	8	Average
%	7	2	10	13	31	6	5	9	18	4.5

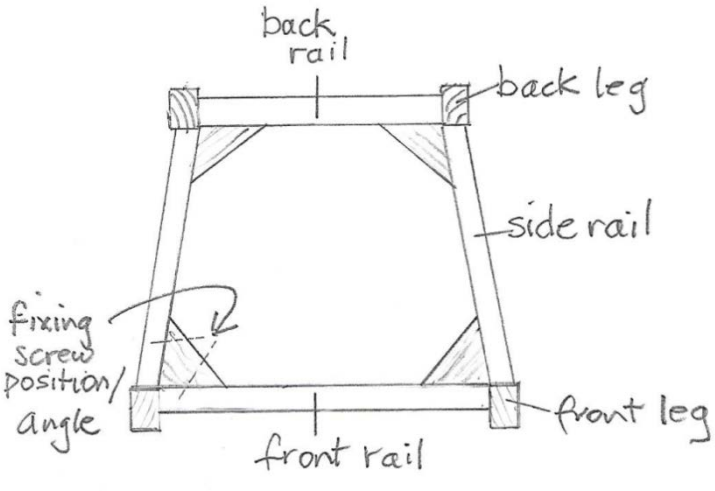
Joint chosen: A B (C) Joint name: dowel joint	
Construction method	Mark and drill holes for dowels to both pieces of material, e.g. leg, rail. Glue dowels in when assembling. Cramp and check for square.
Features	strong joint, accurate
	simple to construct

Joint chosen: (A) B C Joint name: mortise and tenon	
Construction method	Mark and cut mortise and tenon. Glue upon assembly.
Features	Strong joint when well-constructed.
	Feature joint of good quality work. Does not require additional pieces to construct (e.g. no dowels).

Question 10

Marks	0	1	2	3	4	Average
%	36	16	17	20	11	1.5

A good response to this question included a sketch showing the 4 rails (2 side rails and front and back rails) with the crosshatched section of the 4 legs in each corner. The triangular section corner blocks should be fixed in each corner with the position of the fixing screws angled to ensure a strong joint. The grain direction would be marked at an angle (45 degrees) to both sides and back/front rails. The fixing position of the screws should have been marked in situ to indicate a strong joint.



Question 11

Marks	0	1	2	Average
%	16	43	41	**1.3**

- planing against the direction of the grain
- curly grain, interlocked grain, i.e. around knots and change of grain direction/the grain followed more than one direction
- blunt tools being used
- blade set too deep or not parallel to the sole of the plane

Question 12

Marks	0	1	2	3	4	Average
%	5	8	22	32	33	**2.8**

- router is in working order/test and tag up-to-date/bit secure
- cord inspection (ensure that the power tool has a suitable safe work area/check power tool for any obvious signs of damage)
- appropriate clamping of material/work area is appropriate
- PPE is to be worn/dust control/noise control (e.g. safety glasses, ear protection, appropriate footwear, dust mask, tie back long hair, restrain loose clothing)

Students generally completed this question well.

Question 13

Marks	0	1	2	Average
%	46	35	19	**0.8**

The following are examples of the kinds of responses that were acceptable.

Sample 1:

The term ‘sustainable’ refers to the source where the material has been obtained from. A source that has been officially registered by the appropriate authority such as the Forest Stewardship Council (FSC). The timber usually comes from plantation or controlled forest supplies, which have renewable resourcing as part of the process of harvest.

Sample 2:

Sustainable timber refers to timber that has been harvested responsibly. That is, when one tree is cut down for use, another is immediately planted to replace it. However, it is about more than just planting more trees to replace those being cut down – it also involves ensuring that there is no damage to the surrounding environment or to native flora and fauna. To be classified as sustainable timber, the timber must come from an Australian certified sustainable forest.

Sample 3:

- FSC certified
- use of veneer instead of solid timber to conserve use
- use sustainable regrowth timber
- recycled
- engineered timber

Students struggled to include details. Many were not aware of how timber is sold, durability or the meaning of FSC.

Section C – Case study

Question 1

Marks	0	1	2	3	4	5	6	7	8	9	Average
%	14	8	19	18	12	12	9	6	2	0	**3.2**

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	**52**	20	black bean	
c	front/back rails	2	**380**	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	**19**	VPB	
g	front pilasters	2	**300**	40	35	black bean	
h	rear pilasters	2	300	40	35	black bean	
i	back	1	450	300	19	**VPB**	
j	drawer blades rails	3	450	40	20	Victorian ash	
k	drawer runners/kickers	**6**	365	40	20	Victorian ash	
l	drawer fronts	2	450	150	20	black bean	
m	drawer handles	2	450	**80**	10	black bean	
n	drawer sides	4	**371**	120	12	Victorian ash	
o	drawer backs	2	450	88	**12**	Victorian ash	
p	drawer bottoms	2	**414**	365	6	Victorian ash plywood	
q	drawer slips	4	359	20	12	Victorian ash	

Question 2

Marks	0	1	2	3	4	5	6	7	Average
%	20	16	30	14	12	4	4	0	2.1

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	Drill holes/drill legs and rails for dowels.	drill press/horizontal borer and drills
4	*Mark out and shape the rails.*	*band/jig saw, spoke shave, scrapers*
5	Mark and shape legs	band/jig saw, spoke shave, scrapers
6	*Sand all faces.*	*sandpaper and blocks*
7	*Dry test assembly.*	*clamps and clamping blocks, ruler*
8	Glue sides to legs ensuring they are square and that there is no waste.	clamps and blocks, ruler, glue, clean up equipment
9	*Glue and clamp side to the front/back rails.*	*clamps and clamping blocks*
10	Prepare for final assembly of carcase.	

Question 3

Marks	0	1	2	Average
%	72	10	19	0.5

Mr Smith would use a sharpened, curved or convex spoke shave to match the concave shape of the inside part of the leg. He would work from the top or start of the curve and work downwards and therefore with the grain to produce a smooth finish prior to sanding.

Most students found this question challenging.

Question 4

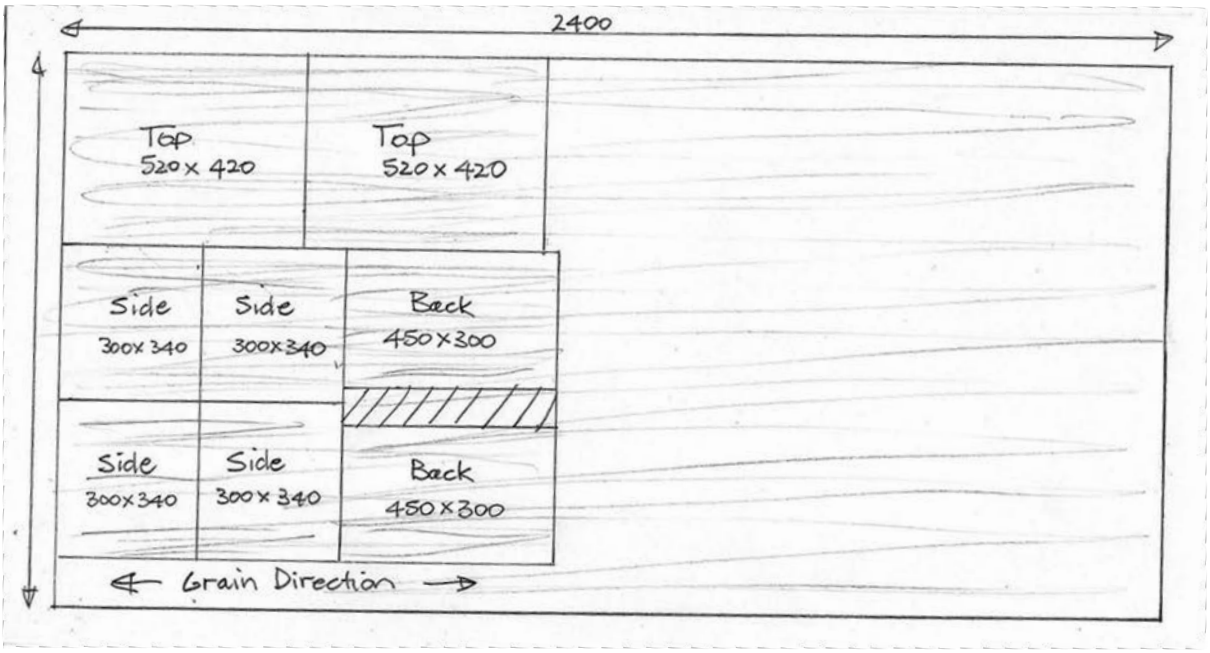
Marks	0	1	2	Average
%	13	39	48	**1.4**

- Check that the leg frame is parallel and square, all parts on the same plane.
- Check for twist and wind.

This question was answered well by some students.

Question 5

Marks	0	1	2	3	4	5	Average
%	67	15	10	4	2	2	**0.7**



Students generally did not complete this question well. Many had problems with the grain structure, and some did not realise that they were asked to set out for two bedside tables.

Question 6a.

Marks	0	1	2	Average
%	59	23	18	**0.6**

On the drawer front and sides to hide the joint from the front view because of the timber handle or for a strong joint

Question 6b.

Marks	0	1	Average
%	33	67	**0.7**

Across the unit or horizontally

Question 7a.

Marks	0	1	2	3	4	Average
%	74	20	5	1	0	0.4

Material	Characteristic
black bean	Australian timber/FSC certified/porous and coarse grain, streaky brown colour, light striped bands
VPB	veneer is a thin material used over the top of less expensive material (particleboard)/veneer is high yield, FSC certified, enables more expensive timbers to go further
Victorian ash	from plantation material/Australian timber, non-rainforest, FSC certified
plywood	manufactured board/FSC certified/plantation timber used, high yield

Question 7b.

Marks	0	1	2	Average
%	45	34	21	0.8

- He could use Victorian ash from plantation and stain the material to match.
- He could choose a timber matching in colour that is more sustainably formed or grown.

Reason: Replacing the black bean with a lower impact timber reduces its environmental impact.