VICTORIAN CURRICULUM AND ASSESSMENT AUTHORITY

2009 VCE VET Furnishing GA 2: Written examination

GENERAL COMMENTS

In 2009, the number of students sitting the VCE VET Furnishing written examination increased slightly from the previous year. However, many students enrolled in VCE VET Furnishing Units 3 and 4 chose not to undertake scored assessment and hence the exam. The questions on the examination were designed to test students' underpinning knowledge of the seven competencies they had studied in Units 3 and 4 as part of their VCE VET Furnishing program.

Areas of strength

- ability to answer multiple-choice questions
- completing a cutting list
- occupational health and safety
- ability to articulate answers
- understanding of basic mathematical problems

Areas of weakness

- hardware selection and construction knowledge
- generalised and basic work plans
- ability to interpret diagrams

SPECIFIC INFORMATION

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	% No Answer	Comments
1	0	9	91	0	0	Preparing the work area is always the best and safest option.
2	17	59	7	17	0	The stile is always the vertical member.
3	7	17	23	52	1	The trimmer is used for small mouldings and other light routering tasks. Many students chose option D (flushing off overlapping 19 mm plywood attached to the base of a box) but this task is too heavy for the trimmer. Students may have read plywood and not noticed that the thickness was 19 mm.
4	11	82	3	5	0	
5	23	9	18	50	0	The supplier is responsible for providing the MSDS to the end user. In almost all situations the manufacturer supplies the wholesaler/retailer. In most cases, the manufacturer retains a website with the MSDS available, and often provides printed material for retail customers.
6	32	63	3	2	1	When entering measurements onto a cutting list it is accepted practice to only enter the number or numeral, as it is implied that all measurements are in millimetres. This also occurs in drawings, for example, scale drawings.
7	51	14	26	8	0	An auger bit (option C) has a lead screw and tends to pull into the timber. This can result in damage to the article being drilled and this is a potential safety hazard. A forstner bit can be difficult to use but this is not considered a safety hazard.
8	92	5	2	1	0	

Question	% A	% B	% C	% D	% No Answer	Comments
9	3	32	57	8	0	Option C (27 mm) allows some room for movement. Too much allowance reduces the strength of the dowel in one piece or the other by inserting the dowel the full depth at the expense of the matching dowel hole.
10	68	11	19	2	0	
11	8	17	5	69	0	Abrasive paper is measured in numbers; the higher the number, the finer the abrasive finishing quality. Therefore, 220 grit was the correct answer.
12	10	11	46	34	0	'Flatness', although important, is not as critical as parallel, diagonally square or twist and wind.
13	2	90	1	7	0	A wood machinist generally uses a cutting list to machine the materials required, except where the cutting list refers to the full-size set out.
14	22	22	48	8	0	Local safe operating procedures (SOPs) are generally attached to or adjacent to the machine, whichever is the best option for the situation, for example, attached to a wall nearby.
15	29	32	21	18	0	A spokeshave is available with both a rounded sole for shaping concave shapes and a flat sole for shaping convex shapes.
16	7	11	54	28	0	Dividing 30 g by 5 (ratio of 5:1) gives 6 g as the amount of hardener required.
17	7	8	67	17	1	Veneer should always be sanded in the direction of the grain, otherwise scratching will occur.
18	38	36	18	7	1	The cutting list is the link to preparing timber for the construction process.
19	10	28	16	47	0	If there were no drawer kickers, the drawer would drop down or possibly topple out of the carcase. This may cause damage to the drawer, or other parts of the carcase and contents of the drawer.
20	47	11	8	34	0	The backing iron is fixed slightly behind the back part of the blade, allowing projection of the blade to produce shavings as required.

Section B – Short answer questions

For each question, an outline answer (or answers) is provided. In some cases the answer given is not the only answer that could have been awarded marks.

Question 1a.

Marks	0	1	2	Average
%	47	11	42	**1.0**

3 metres × 1.5 metres = 4.5 metres (one panel)
4.5 metres × 3 (no. of panels) = 13.5 metres
13.5 metres × 2 (no. of sides) = 27 m^2

Question 1b.

Marks	0	1	2	Average
%	56	9	36	**0.8**

27 m^2 ÷ 1.5 litres = 18 litres

Question 2

Marks	0	1	2	Average
%	21	11	68	**1.5**

275 ml per table × 7 tables = 1925 ml; 1925 ml ÷ 500 ml = 3.85
Therefore, four more containers of PVA glue are required.

Question 3

Marks	0	1	2	3	Average
%	14	24	29	32	**1.8**

Students were asked to select three items from a list of five and explain how/why each item can affect the measurement and cost of materials.

Possible responses included:

- grain direction: this can be affected with both solid timber and veneered boards where components may not be available, causing the use of joining processes. For example, narrow boards may have to be joined or veneered board may also have to be joined to accommodate sizes of component parts. This can also affect the quote for the project. Where available lengths pose a problem, design alterations may need to be considered
- limited widths of available material: limited widths of sheet and solid timber boards would require joining processes, causing increased labour charges. Prices can vary for various widths per metre, adding to the overall cost. Many materials are no longer available due to the shortage of some species of timber
- laminate sheet: when purchasing laminate in sheet form (which is sold in standard sheet sizes) it is important to plan coverage well by doing a cutting plan. If a patterned or wood grain is being used then particular care should be taken in the cutting plan process, as failure to do so can be expensive
- making chair legs: when producing chair legs it is important to source both back legs from the same piece of timber, providing the same grain structure, colour and texture. The pattern should be 'nested' in order to make sure that 'short grain' is minimal and less timber is used in the process. Legs need to tolerate impact and weight
- drawers instead of shelves: a drawer unit will require more and different types of materials, and will require more processes. There is also the possibility of hardware to be purchased, for example, metal drawer slides. The time taken to construct the drawers will increase and there will be a higher labour component.

Question 4

Marks	0	1	2	3	4	Average
%	13	19	28	16	24	**2.2**

Students were asked to consider two things when measuring a room in which to install new cabinets. Some possible examples included:

- out of square walls: spacers or fillets need to be allowed for at the side of cabinets nearest an adjoining wall
- location of power points: power points may need to be relocated or new points installed. This will ensure new cabinets can be used in conjunction with other appropriate electrical equipment, and that safety is taken into consideration
- plumbing connections: if the new cabinets house sinks, a washing machine, dishwasher or clothes dryer, pipes may need to be moved, altered or installed
- floor level: bases may need to be scribed to the floor to ensure that the new cabinets are kept level. This will ensure that doors and drawers operate correctly, and gaps between each adjacent door or drawer are kept even.

Question 5

Marks	0	1	2	3	Average
%	3	30	41	26	**1.9**

Students were asked to list three reasons why a full-size set out should be drawn prior to construction. Responses could have included:

- to produce a cutting list
- to show all details of work to be done
- so mouldings can be produced from the detailed drawing
- so details of construction are clear
- so the project can be made again
- to get an overall size of the project

- to help solve problems in the construction process
- to help to source cutters, router bits, hardware and other materials
- to help get the proportions right.

Question 6

Marks	0	1	Average
%	94	6	**0.1**

iv. timber or metal buttons

Question 7

Marks	0	1	2	3	Average
%	10	5	3	81	**2.6**

(1) check measurements on set out (given)
(2) mark out dowel positions with a marking gauge
(3) set up drill and check depth
(4) drill all holes
(5) or (6) collect glue, cramps and cramping blocks
(6) or (5) do a 'dry run' assembly
(7) glue and cramp up legs and rails

Question 8a.

Marks	0	1	2	3	Average
%	7	21	11	60	**2.3**

8ai.
3. shelf support with button

8aii.
2. pins and cam

8aiii.
4. brass shelf support and bush

Question 8b.

Marks	0	1	Average
%	80	20	**0.2**

A top connector is used to hold bench tops together, generally at right angles, and is positioned and tightened from under the tops in machined holes/grooves. The tops are then screwed/fixed down to the carcase.

Question 9

Marks	0	1	Average
%	30	70	**0.7**

A suitable response could have been:

- the timber being cut is entangled between the uprights on the trolley. There is potential for the extension cord to be caught up in the cutting process.

Question 10

Marks	0	1	2	3	4	Average
%	0	2	10	25	62	**3.5**

Four of:

- the operator is not wearing safety glasses
- proper support for the timber is not being used
- ear protection is not being worn
- there is a sheet of material leaning against the wall partially covering the safety sign and the SOP (standard operating procedure)
- the operator is not wearing the correct footwear

- timber is projecting out from the corner of the wall
- the operator has an Ipod ear phone attached.

Question 11

Marks	0	1	2	Average
%	7	10	83	**1.8**

The safety sign advises operators to wear hearing and eye protection.

Question 12

Marks	0	1	2	Average
%	2	27	71	**1.7**

In addition to the PPE indicated by the safety sign, other PPE the operator should wear includes:

- a dust mask or breathing apparatus
- correct footwear (safety boots/shoes).

Question 13

Marks	0	1	Average
%	16	84	**0.9**

When cutting long lengths of timber, the timber should be supported by a properly made support or cutting table (perhaps with inbuilt rollers) and at the same height as the drop saw table. An adjustable portable roller support could be used to support extra long lengths of timber safely.

Question 14

Marks	0	1	2	3	Average
%	0	13	26	60	**2.5**

Changes that should be made to the workshop/workspace in the picture to make it safe include:

- move the timber sheet that is partially hiding the safety information away from the wall
- install a power outlet below table height to eliminate the extension lead, or place the power leads in a safe operating position
- use a properly constructed support table and/or an adjustable portable support stand
- better lighting
- clear away all obstructions
- consider moving to a new site to get away from the corner of the wall, which is a potential safety problem.

Question 15

Marks	0	1	2	Average
%	11	49	40	**1.3**

Two other ways this task could be done if a drop saw was not available are:

- dimension saw/table saw
- hand saw/tenon saw.

Question 16a.

Marks	0	1	Average
%	30	70	**0.7**

The tag shows the date the cord/machine was tested and the period before a re-test is required.

Question 16b.

Marks	0	1	Average
%	46	54	**0.6**

The purpose of the tag is to ensure the cord/machine is safe to use until the expiry date is reached.

Question 17i–ii.

Marks	0	1	2	Average
%	2	21	76	**1.7**

Things the operator should do before starting any machining task include (two of):

- follow all safety equipment procedures
- do all pre-operational checks
- read the standard operating procedure (SOP) for the machine
- ask someone to show you how to use the machine safely.

Question 18

Marks	0	1	Average
%	12	88	**0.9**

No, explain why.	Yes, provide a method to reduce the hazard.
The drop saw has a dust bag fitted. The bag needs to be emptied frequently and the air passage needs to be kept clear of obstructions that may make this minimal device effective.	Depending on what is being cut, there will still be some hazard so an induction vacuum is applicable. Connect the induction vacuum to an extractor system, either fixed or portable.

Question 19a.

Marks	0	1	Average
%	41	59	**0.6**

The saw is in its extended position. This makes it unsafe to use if timber is placed on the table to be cut.

Question 19b.

Marks	0	1	Average
%	53	47	**0.5**

Move the machine away from the wall, keep moving parts lubricated and in good working order, including using a sharp blade with noise reducing capability.

Other possible answers included:

- the saw is too close to the wall
- adjust the housing to cover the blade if the guard is not operating correctly
- move the machine away from the wall
- the machine has been left in an extended position; move it back to a safe position.

Question 20

Marks	0	1	2	3	4	Average
%	10	10	27	35	18	**2.4**

Activity – List the tasks required to perform the activity in the sequence they are carried out.	Hazards – Against each task list the hazards that could cause injury when the task is performed.	Risk control measures – List the control measures required to eliminate or minimise the risk of injury from the identified hazard.
Ensure the tool is set up correctly	Electrocution Pinching/crushing	Make sure the tool is disconnected from the mains power supply. Ensure that the tool is securely mounted. Unlock and adjust only one movement at a time.
Connect the power	Electrocution	**Do pre-operational checks.**
Place the job on the saw	**Incorrect lifting techniques, operational checks**	Use correct lifting technique. Do not over reach. Bend your legs and keep the load close to your body. Ask for help if the load is too heavy for one person.

Activity – List the tasks required to perform the activity in the sequence they are carried out.	Hazards – Against each task list the hazards that could cause injury when the task is performed.	Risk control measures – List the control measures required to eliminate or minimise the risk of injury from the identified hazard.
Cut the timber	**Kickback, guard jamming**	Check guards before use. Check all locking and adjusting devices are tight and correctly adjusted. Do not place hand(s) in the line of cut. Do not cross over arms. Do not cut short lengths of material. Use the material clamps provided.
	Airborne dust	Ensure dust bags are emptied and fitted correctly. Use a vacuum dust extractor if possible. Use PPE to prevent dust inhalation.
	Noise	Ensure the blade is sharp. Use PPE to protect your hearing.
Remove the job	Lifting the job – Manual handling	Use correct lifting techniques. Do not over reach. Bend your legs, keep the load close to your body and ask for help if the load is too heavy for one person. Ensure that the material does not contact the blade before or after cutting.
Remove the waste	Chance of laceration to hand	**Do not remove waste with your hands, use a push stick or remove waste when the machine has fully stopped and isolated.**

Section C – Case study

The Case study section of the examination featured a scenario which described a project similar to the project which students were expected to complete during their study. This section tested students' knowledge of the project or case study. This year the project selected was a sofa table. This section of the exam was done well and students' ability to answer correctly continues to improve.

Question 1

Marks	0	1	2	3	4	5	6	7	8	9	10	Average
%	4	6	8	13	11	19	12	13	8	5	1	**4.8**

Cutting list for sofa table

Item No	*Item*	*No. of Pieces*	*Length*	*Width*	*Thickness*	*Material*	*Machining/ remarks*
1	leg	4	**780**	50	**50**	recycled ash	dowel to rails
2	top	1	**1230**	**420**	30	"	3/1250 × 140 × 32
3	shelf	1	1170	360	20	"	3/1190 × 120 × 22
4	back rail	1	1090	140	20	"	dowel to legs
5	side rail	2	**280**	140	20	"	dowel to legs
6	drawer front	1	520	140	20	"	machine timber in order to match grain/groove for ply bottom
7	front rail	2	**285**	**140**	20	"	"
8	drawer rail	2	1130	50	20	"	dowel to legs/end rail
9	drawer guide	2	320	140	20	"	biscuit joint to back rail/check out and screw to drawer rails

Item No	*Item*	*No. of Pieces*	*Length*	*Width*	*Thickness*	*Material*	*Machining/ remarks*
10	drawer kicker	2	270	20	20	"	screw to drawer guide
11	drawer runner	2	270	20	**20**	"	screw to drawer guide
12	top fixing cleat	2	**280**	20	20	"	screw to end rail
13	drawer side	2	330	100	12	hoop pine	groove for ply bottom
14	drawer back	1	520	82	12	"	round along top edge
15	drawer bottom	1	504	324	4	**hoop pine plywood/matching ply/ash ply**	fit to groove in drawer front/sides

This question tested students' understanding of specification(s) and their ability to complete cutting list details. Students needed to understand the specifications and complete the cutting list provided.

Question 2a.

Marks	**0**	**1**	**2**	**3**	**4**	**Average**
%	33	11	14	23	19	**1.9**

Students were asked to sketch a plan view of the shelf for the sofa table. The plan view should have included:

- overall dimensions of the shelf: 1170 mm × 360 mm
- cut outs for the legs: 40 mm × 40 mm
- method of joining the timber for the shelf: biscuit or dowel joints
- method of attaching to the legs: dowel joint to leg/part dowel and metal bracket.

A sketch showing all of the above information gained full marks.

Question 2b.

Marks	**0**	**1**	**2**	**Average**
%	71	8	22	**0.5**

2bi.

3 boards required @ 1230 mm = 3.690 lineal metres

2bii.

3.690 lineal metres × $9.35 = $34.50

Question 3

Marks	**0**	**1**	**2**	**3**	**Average**
%	22	44	26	9	**1.2**

1.	Machine dress all recycled ash timber as per the cutting list/full-sized set out.
2.	**Join the top and the shelf using dowels/biscuits, sand and cut to size including dowels and cut outs for the legs.**
3.	**Make and pre-fit all parts including front panels, cleats, drawer runners and kickers.**
4.	Cramp together legs and end rails making sure all checks for parallel, twist and wind, straight and diagonally square are carried out and all excess glue is removed.
5.	**Glue and cramp rails, shelf, back rail, fit all cleats/panels, drawer, and drawer runners and kickers' guides. Fit drawer bottom and screw down a sanded, finished top.**
6.	Sand all surfaces so that dents, scratches and machine marks are removed. The sofa table is now ready to be polished/finished.

Question 4

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

Portable jig saw

Question 5

Marks	0	1	2	3	4	5	6	7	8	Average
%	9	2	6	6	14	16	26	13	8	**4.8**

	Hand Tool	Process Used
1	Steel rule	For measuring components and setting out dovetail joints for the drawer
	Marking gauge	To accurately mark dowel positions on the legs, and rails for the table, etc.
2	Marking gauge	Accurately marking out joints/dowels on the table
	Flat spokeshave	To clean up and shape the curved back for the fitted drawer
3	Smoothing plane	Planing chair legs/general cleaning up of machine marks on the table components
	Sliding bevel square	To assist in marking out processes for the table and the fitted drawer
4	Adjustable bevel	Marking out angles for fitted drawer's dovetail joints
	Sash cramps	To cramp the legs and rail of the table together

Possible responses are listed in the table above. Marks were awarded for responses that did not include power tools, abrasive paper or a pencil. The process must have reflected work done on the table the student constructed during the year or the sofa table pictured in Figure 1. General responses were not acceptable.

Question 6

Marks	0	1	2	Average
%	62	18	20	**0.6**

1 leg (780 + 300) = 810 × 4 = 3.240 lineal metres
3.240 lineal metres × 47.75 = $25.11