



2010 VCE VET Engineering Studies Certificate II GA 2: Examination

GENERAL COMMENTS

The majority of students attempted all the questions on the 2010 paper and there were very few unanswered questions.

Student responses to the 2010 paper demonstrated the following.

- Section A: As in previous years, the majority of students handled this section well. Students could further improve in this section by focusing on the key words in each question before responding.
- Section B: Students are still struggling to sketch acceptable orthographic views in third-angle projection. They appeared not to understand the basic concept of third-angle projection and continue to struggle with basic drawing conventions such as dimensioning. Section B, Question 1 asked students to sketch an isometric view of a parallel clamp jaw and this was handled well. In general, it appeared that students need further exposure to basic drawing principles and techniques. Practice using prior examinations and sketching items under guidance would improve their skills in this area.
- Section C: While most students did well in answering questions such as listing tools required for a job, many had difficulty with questions asking them to describe a set-up or an operational procedure. In practical situations, students need to be encouraged to think about the operational planning of the product they are producing. Students may be able to perform stand-alone operations, but may not understand the total task.
- Section D: This section was answered well. Most students demonstrated a good understanding of safety in the workplace.
- Section E: The majority of students had difficulty with the practical questions that asked them to explain or describe an operation or process. It appears that in practical situations students are performing operations without understanding how they were set up or why. It may be advantageous for students to do their own set-ups and planning.

In Sections B and D, the following general approaches were followed in allocating marks.

- To gain marks, responses needed to be consistent with the level of knowledge expected of a trainee in the engineering industry at a Certificate II standard.
- If a question required one response and the student gave more than one response, all answers were accepted provided that the responses were correct and did not contradict each other. Students are more likely to be awarded marks if they provide concise answers appropriate to the question, rather than a range of responses.
- If a response did not address the subject of a question, it was not awarded any marks.

SPECIFIC INFORMATION

Section A – VBN 771 Apply electrotechnology principles in an engineering environment

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	69	10	9	11	
2	57	14	22	7	
3	0	98	1	1	
4	27	1	52	19	
5	5	13	81	1	
6	20	67	9	3	
7	6	14	79	1	
8	11	3	74	10	
9	71	5	17	7	
10	5	8	30	56	
11	7	87	5	1	
12	21	11	3	65	



Question	% A	% B	% C	% D	Comments
13	8	70	7	15	
14	16	9	72	2	
15	45	6	5	44	At first glance, option A (lowest) may have appeared correct from a safety perspective. But as the question is referring to the range of the voltmeter and not the voltage supply, the answer is option D (highest).

Section B – VBN 773 Produce engineering sketches and drawings

Question 1

Marks	0	1	2	3	4	Average
%	29	34	24	7	6	1.3

Marks were allocated for:

- correct views in third-angle projection
- all necessary dimensions shown for slot
- correct centre lines and hidden detail shown.

A common issue for this question was that some students provided the incorrect detail on views.

Question 2a–c.

Marks	0	1	2	3	Average
%	6	26	44	25	1.9

2a.

Radius 8 mm

2b.

It is a sectioned view.

2c.

3 mm

2d–f.

Marks	0	1	2	3	4	Average
%	7	21	22	27	22	2.4

2d.

Inaccuracies could result from a cumulative error.

2e.

± 0.05

2f.

Third-angle projection

2g.

Marks	0	1	2	3	4	Average
%	24	7	15	34	21	2.2

Marks were allocated for:

- correct shape
- all outlines complete
- isometric accuracy.

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Section C – VBN 776 Using basic engineering concepts to plan the manufacture of engineering components

Question 1a–b.

Marks	0	1	2	3	Average
%	18	31	20	30	1.6

1a.

Answer B

1b.

Make the retainer plate longer and drill Ø9 hole, then cut to length (milling with a Ø9 cutter was also accepted).

Question 1c.

Marks	0	1	2	3	Average
%	4	22	52	23	2

- turning tool
- centre drill
- M10 die (or screw cutting tool)
- knurling tool
- Ø6 drill
- countersink tool

Other tools such as a parting tool were also accepted.

Question 1d–e.

Marks	0	1	2	3	Average
%	9	22	24	46	2.1

1d.

To put a bar through for tightening the clamp (or similar answer)

1e.

In a three-jaw chuck supported by a centre

Question 1f.

Marks	0	1	2	3	Average
%	11	2	3	85	2.6

Sequence	Operation
1	Drill Ø10.2 through
2	Counter bore
3	Drill Ø5.1
4	Tap M6 x 10 deep
5	Drill Ø7 x 6 deep

Question 1g–h.

Marks	0	1	2	3	Average
%	49	20	24	7	0.9

1g.

A number of answers were accepted, including:

- place a rule flat on the fixed jaw and align visually
- use a surface gauge

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- mark another line below the line to be cut and use it to align with fixed jaw.

1h.

Use a countersunk screw.

Section D – VBN 777 Handle engineering materials in a safe and proper manner

Question 1

Marks	0	1	2	Average
%	3	59	39	1.4

Answers focusing on:

- the coils rolling away
- smaller coils being crushed by larger coils on top.

Question 2

Marks	0	1	Average
%	3	97	1

Answer C

Question 3

Marks	0	1	Average
%	2	98	1

Answer A – because their back is not bent and they are using their legs to lift.

Question 4

Marks	0	1	Average
%	2	98	1

2000 kg

Question 5

Marks	0	1	Average
%	3	97	1

It is frayed and could snap under load.

Question 6

Marks	0	1	2	Average
%	2	36	62	1.6

Any two of the following or similar answers:

- poor visibility, could run into something
- top boxes falling because they are stacked too high
- back injury caused by twisting.

Question 7

Marks	0	1	2	Average
%	7	16	77	1.7

- use a team lift
- use a mechanical aid

Question 8a–e.

Marks	0	1	2	3	4	5	Average
%	1	1	2	5	19	73	4.6

8a.

Container may vent, rupture or burst

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8b.

Flush eyes with clean water for 15 minutes.

8c.

Answer C

8d.

Could cause fire to spread

8e.

Any two of:

- sand
- sawdust
- absorbent sweeping compound
- rags.

Section E – VBN 778 Produce basic engineering components using fabrication and machining techniques

Question 1a–b.

Marks	0	1	2	3	4	Average
%	2	7	32	42	17	2.7

1a.

Answers C and E

1b.

Line up with tailstock centre and use a rule between tool and work (face off and adjust was also accepted).

Question 1c–g.

Marks	0	1	2	3	4	5	Average
%	7	16	25	28	16	8	2.6

1c.

The tool will rub and not cut.

1d.

Get a better finish on the work (dissipate heat from the point also accepted).

1e.

Micrometer

1f.

Diameters 6, 12 and 18

1g.

13.62 mm

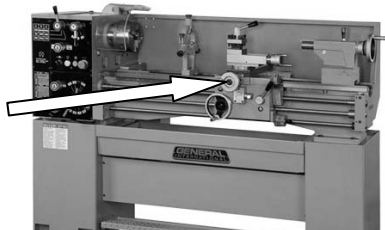
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Question 1h–i.

Marks	0	1	2	Average
%	36	36	28	0.9

1h.



1i.

Answer A

Question 1j.

Marks	0	1	Average
%	36	64	0.7

1.75mm

Question 2a–bii.

Marks	0	1	2	3	Average
%	22	28	29	20	1.5

2a.

Datum faces

2bi.

Protractor

2bii.

The 15° angle

Question 2c. i–ii.

Marks	0	1	2	Average
%	43	30	27	0.9

2ci.

Witness marking

2cii.

To make the lines permanent/stop them from rubbing off/make lines more visible

Question 2d. i–iii.

Marks	0	1	2	3	Average
%	4	24	39	33	2

2di.

To allow the blade to turn around corners

2dii.

Safer for the operator (or similar answer)

2diii.

The blade guide is set too high.

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Question 2e–g.

Marks	0	1	2	3	4	5	Average
%	16	22	16	23	15	9	2.3

2e.

$$\text{RPM} = \frac{320 \times 35}{18} = \frac{11200}{18} \quad \boxed{622 \text{ RPM}}$$

2f.

The milling cutter will cut into the vice jaw and the parallel strips.

2g.

Vernier calliper

Question 2h–i.

Marks	0	1	2	3	Average
%	16	46	23	16	1.4

2h.

Clamp face 'A' against an angle plate and use a square off the table to line up edge 'B' vertically.

2i.

Answer B

Question 3a–b.

Marks	0	1	2	3	Average
%	5	14	38	42	2.2

3a.

Answer B

3b.

Any two of:

- lighter
- won't rust
- easier to work with/fabricate.

Question 3c–e.

Marks	0	1	2	3	4	Average
%	2	7	14	45	32	3

3c.

Any two of:

- scriber
- dividers
- odd leg calipers
- square
- rule
- centre punch.

3d.

To protect people from the sharp edges

3e.

Answer B

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Question 3f–g.

Marks	0	1	2	3	Average
%	18	39	7	36	1.6

3f.

To allow the tabs to fold without interference with each other (or similar)

3g.

- first – safety edges
- second – the six tabs
- third – base folds

Question 3h.

Marks	0	1	2	Average
%	15	37	48	1.4

Two of:

- rivets
- spot weld
- adhesive
- self-tapping screws.