



**GENERAL COMMENTS**

A breakdown of the student responses to the 2011 paper shows the following trends for each section.

- Section A: The average number of correct responses to this section was slightly lower than in previous years.
- Section B: There was an overall improvement in student responses to third-angle projection sketching and dimensioning. The isometric sketch was also handled well by the majority of students. The final part of this section, however, had very few correct responses, with students showing very little knowledge of sectioning.
- Section C: Students continue to struggle with basic operational planning. The majority of students did not machine the thimble from the solid bar and then part it off, but started by cutting off a short piece of material and kept turning the material around several times in the chuck. Operations were also listed out of sequence; for example, countersinking the hole before it was drilled.
- Section D: This section was answered well, with most students showing a good understanding of safety in the workplace.
- Section E: Students had difficulty with the practical questions that asked them to explain a set-up or perform basic troubleshooting.

As in previous years, 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 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 work environment**

Question	% A	% B	% C	% D	% No Answer
1	11	26	56	6	0
2	21	22	55	2	0
3	10	2	6	82	0
4	29	1	63	6	0
5	11	9	44	36	0
6	83	11	3	3	0
7	5	4	9	82	0
8	32	5	56	5	1
9	74	14	3	9	0
10	31	43	12	15	0
11	14	11	30	45	0
12	21	50	17	11	0
13	26	15	9	50	0
14	50	15	15	21	0
15	15	60	5	20	0

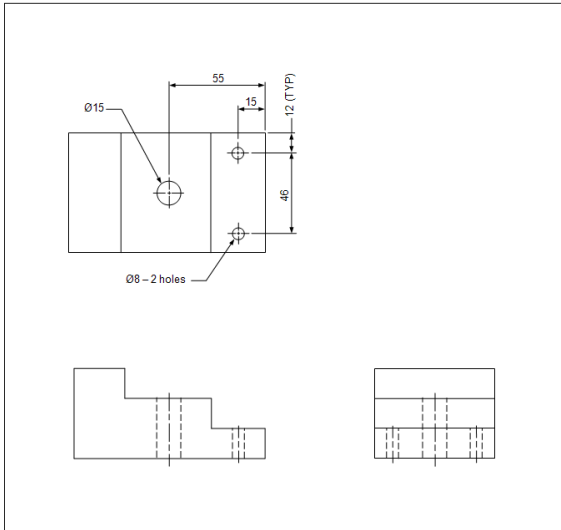
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## Section B – VBN 773 Produce basic engineering sketches and drawings

### Question 1

Marks	0	1	2	3	4	5	6	Average
%	9	10	16	21	23	16	6	3.1



Marks were allocated for:

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

### Questions 2a–c.

Marks	0	1	2	3	4	5	6	Average
%	10	4	14	18	16	30	8	3.5

2a.

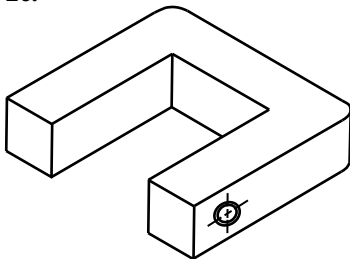
- maximum: 40.1
- minimum: 39.9

2b.

Either of:

- typical
- radius is the same on both sides.

2c.



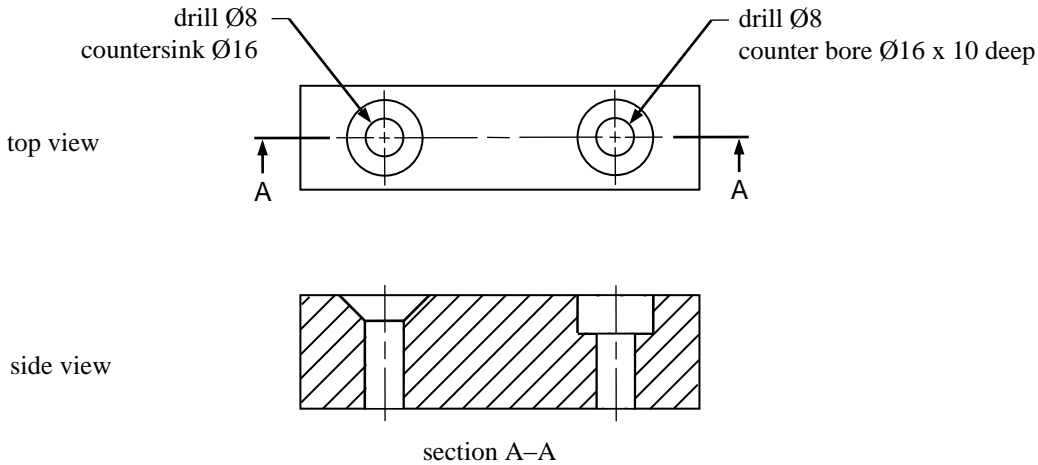
Marks were allocated for correct shape and isometric accuracy.

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## Question 2d.

Marks	0	1	2	3	Average
%	53	32	12	3	0.7



This question was handled very poorly by the majority of students.

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

### Questions 1a–c.

Marks	0	1	2	3	4	Average
%	12	15	22	32	19	2.3

1a.  
300

1b.  
8.5 mm

1c.  
Tap B. because (either):

- it is a bottoming tap
- it gives more full thread in the hole.

### Questions 1d–f.

Marks	0	1	2	3	4	5	6	7	Average
%	16	21	14	13	17	12	5	1	2.6

1d.  
Tap wrench

1e.  
C. 9.95

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1f.

Step	Operation
1	Face and centre drill bar
2	Knurl
3	Turn down thread diameter
4	Cut M10 thread
5	Drill 6 mm hole and countersink
6	Part off
7	Face to length and chamfer
8	Countersink 6 mm hole

Questions 1g–i.

Marks	0	1	2	3	4	Average
%	8	21	60	4	8	1.9

1g.

It gives better grip when turning.

1h.

Either of:

- chamfer/counter bore the tapped hole in the body
- undercut/groove the thread on the thimble.

A number of students thought the thimble was bottoming in the hole, but if the plumb bob is made to the correct specifications this will not happen.

1i.

Either of:

- if the hole was tapped at an angle
- a drunk thread on the thimble.

## Section D – VBN 777 Handle engineering materials

Question 1

Marks	0	1	2	Average
%	4	37	59	1.6

1a.

Team lift

1b.

Either of:

- coordinate the lift
- ensure the pathway is clear.

Question 2

Marks	0	1	2	Average
%	1	14	85	1.9

2a.

Either of:

- when handling sharp edges
- when handling chemicals.

Other reasonable responses were also accepted.

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2b.

Acceptable responses included any example where the gloves could get caught; for example, around rotating equipment or nip hazard, etc.

### Question 3

Marks	0	1	2	Average
%	4	21	75	1.7

Crane and forklift

### Question 4

Marks	0	1	Average
%	19	81	0.8

Any of:

- items stacked in aisles
- liquid spills
- bar-stock protruding from lathe.

Other reasonable responses were also accepted.

### Question 5

Marks	0	1	Average
%	9	91	0.9

Foam extinguisher

### Question 6

Marks	0	1	Average
%	22	78	0.8

A

### Question 7

Marks	0	1	Average
%	21	79	0.8

Contact a doctor or poisons information centre, do not induce vomiting and give the person a glass of water.

### Question 8

Marks	0	1	Average
%	28	72	0.7

Vapours are heavier than air and will travel to low areas.

### Question 9

Marks	0	1	2	3	4	Average
%	1	6	19	37	37	3.1

Any four specific hazards such as:

- grinding close to a flammable substance
- no PPE by either operator
- bent back when pouring
- trip hazards around the grinder
- electrical lead hanging next to the grinder
- thinner poured into the incorrect container.



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

### Question 1

Marks	0	1	2	3	Average
%	16	24	39	20	1.7

#### 1a.

All of:

- grub screw
- countersunk screw
- domed nut
- cap screw.

#### 1b.

Any two of:

- spanner
- hex key
- screwdriver.

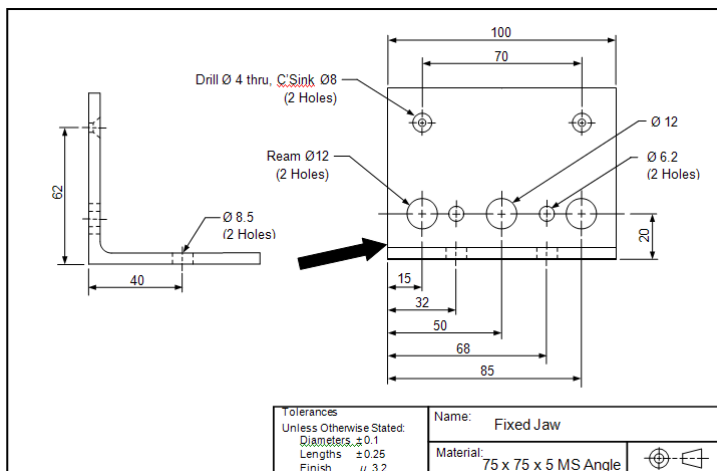
#### 1c.

The thread in the nylon jaw will strip.

### Questions 2a–c.

Marks	0	1	2	3	4	Average
%	15	26	32	23	4	1.7

#### 2a.



#### 2b.

Answers between 101 mm and 105 mm were accepted.

#### 2c.

Any two of:

- machine to length/square ends
- de-burr
- apply layout stain
- clean the material.

### Question 2d.

Marks	0	1	2	Average
%	42	30	28	0.9

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2di.

Vernier height gauge

2dii.

Check (any of):

- for zero
- for cleanliness
- for excessive wear/play
- sharpness of scribe.

**Question 2e.**

Marks	0	1	2	3	Average
%	42	39	7	12	<b>0.9</b>

2ei.

The vice (either of):

- won't assemble
- will jam up/bind.

2eii.

Students needed to describe clamping and drilling together as an assembly.

**Questions 2f–i.**

Marks	0	1	2	3	4	5	Average
%	7	10	17	27	25	15	<b>3.0</b>

2f.

Either of:

- mark out medium
- do a witness mark.

2g.

Both of:

- diameter of drill
- type of material being drilled.

2h.

Either of:

- to ensure an accurate hole size
- to provide a better finish.

2i.

B

**Questions 3a–b.**

Marks	0	1	2	3	4	Average
%	12	18	27	31	12	<b>2.1</b>

3a.

Any six of:

- turning tool
- centre drill
- 12 mm drill
- parting tool
- tapping drill for M5
- M5 taps
- tap wrench
- micrometer
- vernier calliper

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- rule.

3b.

B

### Question 3c.

Marks	0	1	2	3	Average
%	5	11	19	65	2.5

3ci.

C

3cii.

E

3ciii.

B

### Questions 3d–e.

Marks	0	1	2	3	Average
%	33	42	11	14	1.1

3d.

With the general tolerance it is possible for the pin to be larger than the hole, which means it may not fit the hole.

3e.

A

### Question 3f.

Marks	0	1	2	Average
%	43	29	28	0.9

3fi.

Parting tool

3fii.

3 × 1 groove

### Question 3g.

Marks	0	1	2	Average
%	47	12	40	0.9

Any of:

- reduce the RPM
- increase the rigidity of the tool/set-up
- check the tool for centre height
- use coolant/lubricant
- increase the feed rate.

### Question 3h.

Marks	0	1	2	Average
%	30	24	46	1.2

3hi.

Major diameter

3hii.

Pitch



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## Question 3i-j.

Marks	0	1	2	3	Average
%	63	17	8	12	0.7

### 3i.

Answers between 1700 and 1900 were accepted.

### 3j.

35 m/min

## Questions 4a-b.

Marks	0	1	2	Average
%	55	33	12	0.6

### 4a.

To make sure the part is sitting flat

### 4b.

Any of:

- end mill
- slot drill
- side and face cutter.

## Question 4c.

Marks	0	1	2	Average
%	68	20	12	0.5

### 4ci.

The vice was not parallel to the milling machine table.

### 4cii.

Clean the vice jaws and set up a dial indicator against the fixed jaw. Run dial indicator along the fixed jaw, and adjust vice until dial indicator reads zero along the length of the fixed jaw.

Students needed to provide an explanation of using dial indicator or try square against fixed jaw of vice and adjusting accordingly.