VICTORIAN CURRICULUM AND ASSESSMENT AUTHORITY

# 2006 VCE VET Engineering Studies Certificate III GA 2: Written examination

## GENERAL COMMENTS

In 2006 the scored VCE VET program Certificate III in Engineering Studies commenced in Victoria. The examination was based on the following Units of Competence:

- VBN771 Apply electrotechnology principles in an engineering environment
- VBN773 Produce engineering sketches and drawings
- VBN787 Apply mathematical principles to engineering designs
- VBN788 Design and prototype components and/or small structures using engineering design principles.

The examination paper was divided into four sections, one for each Unit of Competence. The examination contained a variety of question types, including multiple-choice, short answer and those requiring drawings, sketching and calculations. To gain full marks for questions requiring a calculation students needed to give the correct answer and the correct units.

Please note that specific information is not available for Sections C and D.

## 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 |
|---|---|---|---|---|
| **1** | 11 | 0 | 0 | 89 |
| **2** | 0 | 0 | 100 | 0 |
| **3** | 78 | 11 | 0 | 11 |
| **4** | 22 | 0 | 67 | 11 |
| **5** | 0 | 0 | 0 | 100 |
| **6** | 11 | 0 | 11 | 78 |
| **7** | 44 | 0 | 56 | 0 |
| **8** | 22 | 0 | 78 | 0 |
| **9** | 0 | 89 | 0 | 11 |
| **10** | 0 | 0 | 0 | 100 |
| **11** | 89 | 0 | 11 | 0 |
| **12** | 67 | 22 | 11 | 0 |
| **13** | 11 | 33 | 44 | 11 |
| **14** | 100 | 0 | 0 | 0 |
| **15** | 0 | 78 | 22 | 0 |

### Section B – VBN773 Produce engineering sketches and drawings

**Question 1**

| Marks | 0 | 1 | 2 | 3 | 4 | Average |
|---|---|---|---|---|---|---|
| % | 0 | 28 | 6 | 0 | 67 | 2.9 |

Marks were allocated as follows:

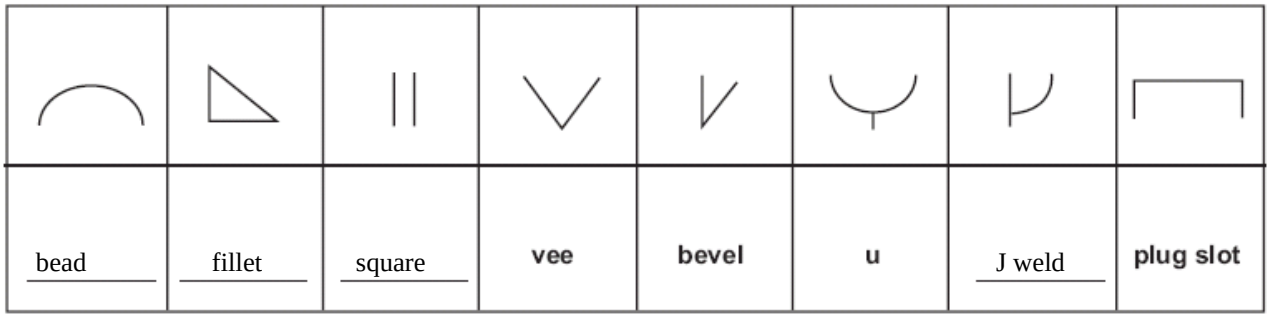
- one mark for an appropriate sketch. The hole could be going in from the end or across the shaft
- one mark for the dimension line. Dimensions that included limit lines were acceptable
- one mark for the centre line
- one mark for the hidden line.

The question instructed students that they **must** label each line; however, many students did not read the question properly and failed to label and clearly identify each type of line. These students could not be awarded full marks.

**Question 2**

| Marks | 0 | 1 | 2 | 3 | 4 | Average |
|---|---|---|---|---|---|---|
| % | 11 | 6 | 50 | 0 | 33 | **2.4** |




This question was not answered as well as expected. Students who had a good exposure to common welding symbols should have been able to determine what these symbols were.

**Question 3**

| Marks | 0 | 1 | 2 | 3 | 4 | 5 | Average |
|---|---|---|---|---|---|---|---|
| % | 6 | 0 | 0 | 22 | 67 | 6 | **3.5** |

Marks were awarded as follows:

- one mark for sectioning the base (drill holes in the base were optional)
- one mark for sectioning the adjusting arm (the sectioning needed to be 90° or opposite to the base)
- one mark for drawing the assembled adjusting arm
- one mark for locating and drawing the locking screw and washer
- one mark for locating and drawing the striker pin.

Generally this question was answered well, with the majority of students displaying good sketching skills; however, the final mark for a fully sectioned front view was not obtained by many students. Students need to ensure that they follow the instructions given in the question.

**Question 4**

| Marks | 0 | 1 | 2 | Average |
|---|---|---|---|---|
| % | 0 | 11 | 89 | **1.9** |

- Top view: F
- Pictorial view: O

This was a very well answered question, with students demonstrating an excellent understanding of third-angle projection interpretation.

## Section C – VBN787 Apply mathematical principles to engineering designs

**Question 1a.**

| Marks | 0 | 1 | Average |
|---|---|---|---|
| % | 0 | 100 | **1.0** |

**Question 1b.**

| Marks | 0 | 1 | Average |
|---|---|---|---|
| % | 11 | 89 | **0.9** |

**Question 2**

| Marks | 0 | 1 | 2 | 3 | 4 | 5 | Average |
|---|---|---|---|---|---|---|---|
| % | 22 | 17 | 17 | 17 | 6 | 22 | **2.3** |

**Question 3**

| Marks | 0 | 1 | 2 | Average |
|---|---|---|---|---|
| % | 0 | 0 | 100 | **2.0** |

**Question 4**

| Marks | 0 | 1 | 2 | 3 | 4 | Average |
|---|---|---|---|---|---|---|
| % | 11 | 0 | 11 | 17 | 61 | **3.1** |

**Question 5a.**

| Marks | 0 | 1 | 2 | Average |
|---|---|---|---|---|
| % | 39 | 0 | 61 | **1.4** |

**Question 5b.**

| Marks | 0 | 1 | 2 | Average |
|---|---|---|---|---|
| % | 11 | 0 | 89 | **1.8** |

**Question 6**

| Marks | 0 | 1 | 2 | Average |
|---|---|---|---|---|
| % | 50 | 6 | 44 | **1.0** |

**Question 7**

| Marks | 0 | 1 | Average |
|---|---|---|---|
| % | 50 | 50 | **0.5** |

**Question 8a.**

| Marks | 0 | 1 | Average |
|---|---|---|---|
| % | 17 | 83 | **0.8** |

**Question 8b.**

| Marks | 0 | 1 | Average |
|---|---|---|---|
| % | 17 | 83 | **0.8** |

**Question 9**

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

**Question 10**

| Marks | 0 | 1 | Average |
|---|---|---|---|
| % | 50 | 50 | **0.5** |

**Question 11a.**

| Marks | 0 | 1 | 2 | Average |
|---|---|---|---|---|
| % | 0 | 6 | 94 | **1.9** |

**Question 11b.**

| Marks | 0 | 1 | 2 | Average |
|---|---|---|---|---|
| % | 11 | 6 | 83 | **1.7** |

**Question 12**

| Marks | 0 | 1 | 2 | Average |
|---|---|---|---|---|
| % | 6 | 17 | 78 | **1.7** |

# Section D – VBN788 Design and prototype components and/or small structures using engineering design principles

**Question 1**
**Sketch**

| Marks | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 0 | 0 | 0 | 6 | 17 | 6 | 11 | 17 | 17 | 6 | 22 | **6.8** |

**Dimensions**

| Marks | 0 | 1 | 2 | 3 | 4 | 5 | 6 | Average |
|---|---|---|---|---|---|---|---|---|
| % | 17 | 0 | 0 | 22 | 17 | 22 | 22 | **3.5** |

**Question 2**

| Marks | 0 | 1 | 2 | 3 | 4 | 5 | 6 | Average |
|---|---|---|---|---|---|---|---|---|
| % | 17 | 0 | 11 | 6 | 28 | 28 | 11 | **3.3** |

**Question 3**

| Marks | 0 | 1 | 2 | 3 | 4 | Average |
|---|---|---|---|---|---|---|
| % | 11 | 6 | 11 | 0 | 72 | **3.0** |

**Question 4**
**Component 1**

| Marks | 0 | 1 | 2 | 3 | 4 | Average |
|---|---|---|---|---|---|---|
| % | 11 | 11 | 6 | 33 | 39 | **2.6** |

**Component 2**

| Marks | 0 | 1 | 2 | 3 | 4 | Average |
|---|---|---|---|---|---|---|
| % | 33 | 0 | 17 | 6 | 44 | **2.1** |

**Question 5**

| Marks | 0 | 1 | 2 | Average |
|---|---|---|---|---|
| % | 6 | 11 | 83 | **1.7** |

**Question 6**

| Marks | 0 | 1 | 2 | 3 | 4 | Average |
|---|---|---|---|---|---|---|
| % | 17 | 17 | 22 | 33 | 11 | **1.9** |