



## **2012 HSC Industrial Technology Metal and Engineering Technologies 'Sample Answers'**

When examination committees develop questions for the examination, they may write 'sample answers' or, in the case of some questions, 'answers could include'. The committees do this to ensure that the questions will effectively assess students' knowledge and skills.

This material is also provided to the Supervisor of Marking, to give some guidance about the nature and scope of the responses the committee expected students would produce. How sample answers are used at marking centres varies. Sample answers may be used extensively and even modified at the marking centre OR they may be considered only briefly at the beginning of marking. In a few cases, the sample answers may not be used at all at marking.

The Board publishes this information to assist in understanding how the marking guidelines were implemented.

The 'sample answers' or similar advice contained in this document are not intended to be exemplary or even complete answers or responses. As they are part of the examination committee's 'working document', they may contain typographical errors, omissions, or only some of the possible correct answers.

## Section II

### Question 11 (a)

*Answers could include:*

- Steel sections could include
  - Flat/plate steel
  - Angle iron
  - SHS (Square Hollow Section)
  - RHS (Rolled Hollow Section)

### Question 11 (b)

*Answers could include:*

Steps:

1. Material selection
2. Marking and cutting out (methods such as CNC, plasma, high-pressure water)
3. Fabrication
4. Assembly process (utilising jigs for consistency)
5. Industrial finishes (durability and cost effectiveness)
6. Quality Control

### Question 12

*Sample answer:*

First separate the alumina (aluminium oxide) from the bauxite by grinding the bauxite to a fine powder and mix with hot caustic soda to dissolve the alumina. Some impurities are filtered out and aluminium hydroxide crystals are formed. These crystals are dried to make aluminium oxide.

The alumina is then dissolved in molten cryolite and the solution put in a carbon-lined furnace where pure aluminium is precipitated from the molten solution by electrolysis.

**Question 13**

*Answers could include:*

- Cutting material to size
- Forging and shaping
- Heat treatment with reference to:
  - Temperature range
  - Quenching medium

**Question 14**

*Answers could include:*

Material selection: mild steel

Marking and cutting process:

- Logical manufacturing process
  - Drill handle hole using ‘V’ block
  - Lathe turning in logical order
  - Cutting options for thread (lathe, die, CNC)
- Finishes

## Section III

### Question 15 (a)

*Answers could include:*

- YouTube lead in ads
- ECommerce technology
- Advert links to online store
- PayPal
- Cloud, iCloud
- Twitter
- Banners and Pop ups
- Social media marketing
- Email
- Online Store
- Facebook
- Apps
- Ebay
- Website/Shopping cart

### Question 15 (b)

*Answers could include:*

Organisation

- In-house versus external support for setup and ongoing maintenance
- Location
  - Warehouse/factory versus shop front
  - Cheaper location
- Management with expertise in technology
- Support services, eg, transport, courier, postal services
- The addition of a web-based marketing, sales and delivery team

Work Practices

- Staff retrained
- Hours of operation to cater for different time zones
- Change in administrative practices to accommodate ordering to dispatch processes
- Extend range of duties/multiskilling
- Staff changes to ensure accuracy of online information
- Awareness of regulations/web-related legislation/security issues