# 2022 HSC Construction Marking Guidelines

## Section I

### Multiple-choice Answer Key

| Question | Answer |
|---|---|
| 1 | B |
| 2 | D |
| 3 | C |
| 4 | A |
| 5 | B |
| 6 | D |
| 7 | B |
| 8 | C |
| 9 | C |
| 10 | D |
| 11 | A |
| 12 | A |
| 13 | B |
| 14 | C |
| 15 | A |

# Section II

## Question 16 (a)

| Criteria | Marks |
|---|---|
| • Correctly names tool and outlines its function | 2 |
| • Either names tool or a use of the tool | 1 |

***Sample answer:***

Plumb bob

- To establish or check a plumb line
- To establish a vertical datum.

## Question 16 (b)

| Criteria | Marks |
|---|---|
| • Correctly describes both techniques | 2 |
| • Correctly describes ONE technique | 1 |

***Sample answer:***

| *Tool* | *Technique* | *Description of technique* |
|---|---|---|
| Chisel | Honing | Part of the sharpening process |
| Handsaw | Ripping | To cut timber along the direction of its grain |

## Question 16 (c)

| Criteria | Marks |
|---|---|
| • Explains considerations regarding plant and equipment purchasing | 4 |
| • Describes considerations regarding plant and equipment purchasing | 3 |
| • Outlines considerations regarding plant and equipment purchasing | 2 |
| • Provides some relevant information | 1 |

***Sample answer:***

The cost of purchase of plant should be considered to determine if the expense is worth it. Purchasing the right item of equipment can increase job efficiency and safety on site resulting in fewer delays and an increased profit.

Maintenance should also be considered as this entails time and additional expense which is required to prolong the life of the tool.

***Answers could include:***

- The frequency of use. Hiring could be a better choice for one-off jobs
- Training or licensing requirements for safe and correct use
- Method of storage and space needed
- Transporting to and from the job site
- PPE needed to be worn
- Registration and insurance costs.

## Question 17 (a)

| Criteria | Marks |
|---|---|
| • Outlines TWO examples of levelling information found on plans | 2 |
| • Lists a type of levelling information found on plans | 1 |

***Sample answer:***

- Location of datum or benchmark
- Contour lines indicating the rise and fall of the land.

***Answers could include:***

- Finished floor level
- Finished ceiling level/height
- Reduced levels.

## Question 17 (b)

| Criteria | Marks |
|---|---|
| • Describes the use of detail drawings in the construction industry | 2 |
| • Outlines the use of detail drawings in the construction industry | 1 |

***Sample answer:***

Detail drawings can be used to clarify the information that cannot be clearly illustrated on sectional views. They can also be used to show compliance with building regulations.

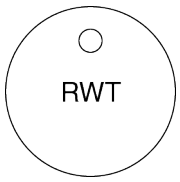
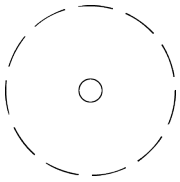
***Answers could include:***

- To enlarge specific aspects of construction for greater clarity (1:20, 1:10, 1:5)
- To provide detailed information about the assembly, joining or finishing of components
- To provide precise dimensions and tolerances
- To clearly identify all components in an assembly
- To provide clarity and minimise confusion.

## Question 17 (c)

| Criteria | Marks |
|---|---|
| • Correctly labels TWO architectural symbols | 2 |
| • Either correctly labels ONE architectural symbol or provides some relevant information | 1 |

***Sample answer:***

| | |
|---|---|
|   | Rainwater tank |
|  | Tree to be removed |

## Question 17 (d)

| Criteria | Marks |
|---|---|
| • Explains the use of drawing specifications and provides examples | 4 |
| • Describes the use of drawing specifications and provides example(s) | 3 |
| • Outlines the use of drawing specifications | 2 |
| • Provides some relevant information | 1 |

***Sample answer:***

A drawing specification is a detailed written description of the project being constructed. It must be used in conjunction with the construction plans. A specification is used to convey information that cannot be included on a set of drawings. Specifications are used to provide instructions on how the work should be completed.

***Examples could include:***

- How the site should be set up
- Materials to be used (bricks, weatherboards, roofing etc)
- Paint colours and number of coats
- Flooring materials to be used and in which rooms (bathroom tiles, carpet, timber flooring etc)
- Types of lights and switches
- Tap fittings and bathroom fixtures
- Brand and model number of appliances
- Architrave and skirting size and profile
- Kitchen bench tops and cabinetry
- Cleanup of the site and final inspections
- Specification sets out sequence of trades
- Includes information on quality of work, Australian Standards, material choices, sizes, colours and positioning.

## Question 18 (a)

| Criteria | Marks |
|---|---|
| • Outlines a work practice that reduces material waste | 2 |
| • Lists a work practice | 1 |

***Sample answer:***

Training staff on the correct techniques to select, measure, handle and store materials to minimise mistakes and damage.

***Answers could include:***

- Use of material lists
- Sorting of waste for reuse or recycling
- Ordering materials in a timely fashion
- Not over-ordering materials
- Correct storage and transport of materials
- Double check quantity calculations
- The most current version of the plans are being used.

## Question 18 (b)

| Criteria | Marks |
|---|---|
| • Clearly describes the steps/process followed in undertaking an on-site meeting | 4 |
| • Describes the process followed in undertaking an on-site meeting | 3 |
| • Outlines parts of an on-site meeting | 2 |
| • Provides some relevant information | 1 |

***Sample answer:***

To carry out a formal on-site meeting, a series of steps should be followed. These include appointing a chairperson to run the meeting, publish the time, location and agenda for the meeting. The meeting should be controlled by the chairperson to keep discussions on track. A record of attendees and minutes should be kept and follow up planned.

***Answers could include:***

- Chair of the meeting
- Scheduling
- Agenda
- Time and duration
- Location
- Follow a set procedure
- Purpose of a meeting
- Outcome
- Minutes
- Attendees / apologies
- Follow up.

## Question 18 (c)

| Criteria | Marks |
|---|---|
| • Clearly describes a range of methods used in construction to plan and organise work | 5 |
| • Describes some methods to plan and organise work | 4 |
| • Outlines methods to plan and organise work or describes one method | 3 |
| • Lists methods to plan and organise work | 2 |
| • Provides some relevant information | 1 |

***Sample answer:***

Methods used to plan and organise work could include the reading and interpretation of construction plans and specifications to establish job requirements. The use of Gantt charts to provide the planned sequencing and duration of tasks. Toolbox and site meetings can be used to inform workers about daily work conditions, changes and site goods or deadlines. Cutting lists and delivery dockets are used to obtain information about material quantities and sizes. SafeWork method statements and safety data sheets can be used to determine correct procedures for using, handling and storing hazardous materials.

***Answers could include:***

- The use of rosters and timetables
- Use checklists
- Delegation of work duties
- Quantity surveyor to establish site costs and material quantities
- Consultation with industry professionals
- Building code of Australia
- Council regulations
- Weather forecast
- Engage professional contractors and trades, eg plumber and electrician
- Testing of new materials and techniques
- CAD (computer aided drawing)
- Product manuals and technical data sheets.

## Question 19 (a)

| Criteria | Marks |
|---|---|
| • Correctly reads the graph and selects the correct answer | 1 |

***Sample answer:***

3700 kg
3.00–4.99 tonne weight range
51–70 km distance
= $450.00

## Question 19 (b)

| Criteria | Marks |
|---|---|
| • Correctly calculates the number of tiles including wastage | 3 |
| • Provides one or more calculations of the area | 2 |
| • Provides some relevant calculation | 1 |

***Sample answer:***

Bathroom area

$1.2 \text{ m} \times 1.2 \text{ m} = 1.44 \text{ m}^2$

$2.4 \times 2.7 = 6.48 \text{ m}^2$

$1.44 \text{ m}^2 + 6.48 \text{ m}^2 = 7.92 \text{ m}^2$

Tile area

$0.3 \times 0.3 = 0.09 \text{ m}^2$

Number of tiles

$7.92 \text{ m}^2 \div 0.09 \text{ m}^2 = 88 \text{ tiles}$

$88 \text{ tiles} \times 1.05\% = 92.4 \text{ tiles}$

$93 \text{ tiles}$

## Question 19 (c)

| Criteria | Marks |
|---|---|
| • Correctly calculates the total labour cost | 2 |
| • Provides some relevant calculations | 1 |

***Sample answer:***

$15 \div 60 = 0.25$

$8.00 + 0.25 = 8.25$

$8.25 \times \$62.00 = \$511.50$

# Section III

## Question 20

| Criteria | Marks |
|---|---|
| • Shows an extensive knowledge and explanation of how conflict may arise in the construction workplace and the impact on workers, employers and clients<br>• Provides relevant industry examples for workers, employers and clients<br>• Provides precise industry terminology in a logical and cohesive response | 13–15 |
| • Shows a thorough knowledge and explanation of how conflict may arise in the construction workplace and the impact on workers, employers and clients<br>• Provides relevant industry examples for workers, employers and clients<br>• Provides industry terminology in a logical and cohesive response | 10–12 |
| • Shows a sound knowledge and explains how conflict may arise in the construction workplace and the impact on workers, employers and clients<br>• Provides relevant industry examples for workers, employers and clients<br>• Provides industry terminology in a logical and cohesive response | 7–9 |
| • Shows an understanding of conflict within the construction workplace and the impact on workers or employers or clients<br>• Provides examples for workers or employers or clients<br>• Provides some industry terminology | 4–6 |
| • Shows an awareness of conflict within the construction workplace<br>• Provides some relevant information about workers or employers or clients | 1–3 |

***Answers could include:***

Possible causes of conflict:

- Poor communication style
- Unrealistic timeframes and workloads
- Lack of organisation
- Opposing priorities or viewpoints
- Equipment and materials not available when needed
- Stress
- Inequity / favouritism
- Mistakes
- Safety concerns over dangerous work
- Near miss
- Workers turning up late, not having the necessary tools or being under the influence of drugs or alcohol
- Not following workplace policies and procedures
- Cultural differences (language barriers, lack of respect)
- Religious beliefs
- Lack of knowledge and skill
- Inappropriate behaviour

- Bullying and harassment
- Offensive language.

Impact on workers:
- Ineffective teamwork / disharmony
- Job dissatisfaction / low morale
- Decreased safety
- Increased absenteeism
- Bad judgement
- Can inspire creativity to solve problems
- Termination of employment.

Impact on employers:
- Less productivity
- Poor workplace culture
- Increased workplace accidents
- Job delays
- Reduced profits / pay disputes
- Damage to business reputation
- High rate of employee turnover
- Legal ramifications
- Provide arbitration / mediation to resolve disputes
- Dismissal of workers, loss of expertise.

Impact on clients:
- Delayed completion or incomplete project
- Loss of confidence in the building company
- Reduced quality of the final project or increased number of errors
- Unresolvable differences
- Legal ramifications
- Builder / trades refusing to return (must find new tradespeople / building contractors)
- Stressful and unpleasant.

# Section IV

## Question 21 (a)

| Criteria | Marks |
|---|---|
| • Demonstrates extensive knowledge of the maintenance of this machine<br>• Uses relevant industry terminology | 5 |
| • Demonstrates sound knowledge of the maintenance of this machine<br>• Uses some relevant industry terminology | 3-4 |
| • Describes basic knowledge of the maintenance of this machine | 2 |
| • Provides some relevant information | 1 |

***Sample answer:***

It is important to check the tyres for general wear and tear. They should also be tested to ensure the correct inflation pressure for ease of transport and stability during use. The mixer must be cleaned with a hose to remove any residual cement and the interior of the drum lightly oiled to prevent corrosion during storage periods. The drive belt should be checked for correct tension and general condition and replaced if needed. All moving mechanical parts that require periodic greasing should be done so on a regular basis.

***Answers could include:***

- Testing and tagging
- Electrical cord inspection prior to each use
- Handles and grips in place and good condition
- All guarding in place and operational
- Electrical switch is operational
- Overall appearance for rust, corrosion
- Check engine oil level for petrol-powered machine
- Fuel system check cleaned and checked for leaks
- Ensure all nuts and bolts are correctly tightened.

## Question 21 (b)

| Criteria | Marks |
|---|---|
| • Show extensive knowledge of a range of harm minimisation on a construction site<br>• Accurately addresses all aspects of the question<br>• Uses relevant industry terminology<br>• Provides relevant industry examples | 10 |
| • Shows thorough knowledge and understanding of a range of harm minimisation strategies on a construction site<br>• Addresses all aspects of the question<br>• Provides industry examples | 8–9 |
| • Shows a sound understanding of harm minimisation strategies<br>• Includes relevant examples | 6–7 |
| • Shows a general understanding of a range of harm minimisation strategies | 4–5 |
| • Shows some awareness of strategies to minimise harm on a construction site | 2–3 |
| • Provides some relevant information | 1 |

***Answers could include:***

- Training and instruction of construction workers (accredited courses, licences, tickets, mentoring etc). Construction induction training (white card)
- Correct storage and maintenance of tools and equipment
- Test and tag of electrical equipment
- Correct storage of hazardous materials and chemicals. Worksite materials stacked and stored correctly
- Workplace signage, posters and tags
- Use of correct manual handling techniques. Use of mechanical lifting aides
- Scaffolding and railing installed when working at heights
- Conduct risk assessments and follow the hierarchy of hazard control
- Designated waste disposal and recycling. Regular worksite clean ups
- Use of safety documentation such as SDS, SWMS, SOP, product labels, manuals, incident reports etc
- Temporary fencing, barricades and hoarding
- Personal protective equipment worn by workers
- Trained first aid personnel and supplies
- Emergency procedures and evacuation processes
- Effective leadership and clear expectations of construction workers
- Effective on-site communication (verbal and non-verbal)
- Clear and established worksite policies and procedures
- Realistic work goals and timeframes
- Correct scheduling of construction tasks
- Scheduled breaks and rotation of repetitive or hazardous tasks
- Toolbox talks and formal on-site meetings
- WHS committee.

# 2022 HSC Construction
# Mapping Grid

**Section I**

| Question | Marks | Unit of competency / Element of competency | Employability skills (Please put an X where appropriate) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Communica-tion | Teamwork | Problem-solving | Initiative and enterprise | Planning and organising | Self-management | Learning | Technology |
| 1 | 1 | Use construction tools and equipment — element 2.1 – page 69 | | | | | X | | X | |
| 2 | 1 | Work effectively and sustainably in the construction industry — element 1.2 – page 14 | | | X | | | | | |
| 3 | 1 | Use construction tools and equipment — element 2.1 – page 70 | | | | | X | | | |
| 4 | 1 | Work effectively and sustainably in the construction industry — element 5.3 – page 26 | | | | X | X | | | |
| 5 | 1 | Apply OHS requirements, policies and procedures in the construction industry — element Incidents accidents and emergencies – page 6 | | | | | | X | | |
| 6 | 1 | Prepare to work safely in the construction industry — element Safe work procedures and practices – page 4 | | | | | X | | | |
| 7 | 1 | Conduct workplace communication — element 1.3 – page 40 | | | | | | | X | |
| 8 | 1 | Plan and organise work — element 3.1 – page 33 | | | X | | | | | |
| 9 | 1 | Carry out measurements and calculations — element 3.1 – page 52 | | | X | | | | | |
| 10 | 1 | Work effectively and sustainably in the construction industry — element 1.1 – page 13 | | | | | | | X | |
| 11 | 1 | Read and interpret plans and specifications — element 1.2 – page 58 | X | | | | | | | |
| 12 | 1 | Prepare to work safely in the construction industry — element Risk management – page 3 | | | | | X | | | |
| 13 | 1 | Use construction tools and equipment — element 2.1 – page 70 | | | | | | | X | |
| 14 | 1 | Carry out measurements and calculations — element 3.1 – page 52 | | | X | | | | | |
| 15 | 1 | Carry out measurements and calculations — element 3.1 – page 52 | | | X | | | | | |

**Section II**

| Question | Marks | Unit of competency / Element of competency | Employability skills (Please put an X where appropriate) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Communication | Teamwork | Problem-solving | Initiative and enterprise | Planning and organising | Self-management | Learning | Technology |
| 16 (a) | 2 | Use construction tools and equipment — element 2.1 – page 69–70 | | | | | | | X | |
| 16 (b) | 2 | Use construction tools and equipment — element 2.1 – page 69–70 | | | X | | | | X | |
| 16 (c) | 4 | Use construction tools and equipment — element 4.1 – page 72 | | | X | X | X | | | X |
| 17 (a) | 2 | Read and interpret plans and specifications — element 1.2, 3.1, 4.2 – page 57–58, 60, 61 | X | | | | | | | |
| 17 (b) | 2 | Read and interpret plans and specifications — element 1.2 – page 58 | X | | | | X | | | |
| 17 (c) | 2 | Read and interpret plans and specifications — element 3.1, 4.3 – page 60–61 | X | | | | | | | |
| 17 (d) | 4 | Read and interpret plans and specifications — element 1.2 – page 58 | X | | X | | X | | | |
| 18 (a) | 2 | Work effectively and sustainably in the construction industry — element 5.1 – page 22 | | | X | | X | | | X |
| 18 (b) | 4 | Conduct workplace communication — element 4.1 – page 46 | X | X | | | X | | | X |
| 18 (c) | 5 | Plan and organise work — element 2.1 – page 34 | X | X | X | | X | | | X |
| 19 (a) | 1 | Carry out measurements and calculations — element 3.1 – page 52–53 | X | | X | | | | | |
| 19 (b) | 3 | Carry out measurements and calculations — element 4.2 – page 53 | X | | X | | X | | X | |
| 19 (c) | 2 | Carry out measurements and calculations — element 3.1 – page 52 | X | | X | | X | | X | |

**Section III**

| Question | Marks | Unit of competency / Element of competency | Employability skills (Please put an X where appropriate) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Communica-tion | Teamwork | Problem-solving | Initiative and enterprise | Planning and organising | Self-management | Learning | Technology |
| 20 | 15 | Work effectively and sustainably in the construction industry — element 3.5 – page 21<br>Conduct workplace communication — element 42.2 – page 43<br>Plan and organise work — element 1.1 – page 31 | X | X | X | X | X | X | X | X |

**Section IV**

| Question | Marks | Unit of competency / Element of competency | Employability skills (Please put an X where appropriate) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Communica-tion | Teamwork | Problem-solving | Initiative and enterprise | Planning and organising | Self-management | Learning | Technology |
| 21 (a) | 5 | Use construction tools and equipment — element 1.4, 2.2, 4.1, 5.2 – page 68, 71, 72, 74 | X | | | | X | | X | X |
| 21 (b) | 10 | Apply OHS requirements, policies and procedures in the construction industry — element Safety – page 3–4<br>Prepare to work safely in the construction industry — element Safe work procedures and practices – page 4–5 | X | X | X | X | X | X | X | X |