



**R3113**

**UNDERSTANDING THE SETTING OUT AND CONSTRUCTION  
OF LANDSCAPING ELEMENTS IN THE GARDEN**

**Level 3**

**Friday 18 February 2011**

**11:00 – 12:00**

**Written Examination**

**Candidate Number:**.....

**Candidate Name:**.....

**Centre Number/Name:**.....

**IMPORTANT – Please read carefully before commencing:**

- i) The duration of this paper is **60 minutes**;
- ii) **ALL** questions should be attempted;
- iii) **EACH** question carries **10 marks**;
- iv) Write your answers legibly in the spaces provided;
- v) Use **METRIC** measurements only;
- vi) Where plant names are required, they should include genus, species and where appropriate, cultivar.

**ANSWER ALL QUESTIONS**

**MARKS**

**Q1** a) State **THREE** methods of securing timber fence posts.

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b) Describe the procedure using **ONE** of the methods in a), to construct a modular fence.

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## MARKS

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### Q3

Describe the correct handling, storage and reinstatement of soil during construction works.

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## MARKS

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**MARKS**

- |           |    |     |  |          |
|-----------|----|-----|--|----------|
| <b>Q4</b> | a) | i)  | Explain the term 'temporary bench mark' and,         | <b>1</b> |
|           |    | ii) | State where it typically would be located on a site. | <b>1</b> |

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- b) Describe how existing and proposed levels are indicated on plan drawings. **4**

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- c) Explain how the new levels are set out on site.

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**Please turn over/.....**

**Q5** a) State **TWO** advantages and **TWO** disadvantages of using a butyl liner compared with concrete in the construction of a formal pond.

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**Q6** a) State **ONE** type of flexible paving and **ONE** type of rigid paving suitable for a domestic driveway.

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b) Describe the installation procedure for the foundations of an area of block paving on a consolidated sub-grade.

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## MARKS

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**Q7**

Explain the purpose of **EACH** of the following in relation to a garden wall:

- |      |                    |   |
|------|--------------------|---|
| i)   | coping;            | 2 |
| ii)  | bond;              | 2 |
| iii) | damp proof course; | 2 |
| iv)  | weep holes;        | 2 |
| v)   | pointing.          | 2 |

**Please see over/.....**

## MARKS

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**Q8** a) Describe the construction of a concrete ramp from a patio down to a lawn in a domestic garden.

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b) Describe an appropriate method of drainage for the base of the ramp described in a).

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## RHS LEVEL 3 CERTIFICATE IN THE PRINCIPLES OF GARDEN PLANNING, CONSTRUCTION AND PLANTING WRITTEN EXAMINATION

11:00am Friday 18<sup>th</sup> February 2011

R3113

### UNDERSTANDING THE SETTING OUT AND CONSTRUCTION OF LANDSCAPING ELEMENTS IN THE GARDEN

<b>Candidates Registered</b>	<b>10</b>		<b>Total Candidates Passed</b>	<b>4</b>	<b>40.0%</b>
Candidates Entered	10	100.0%	Passed with Commendation	0	-
Candidates Absent	0	-	Passed	4	40.0%
Candidates Deferred	0	-	Failed	6	60.0%
Candidates Withdrawn	0	-			

- Q1** a) State **THREE** methods of securing timber fence posts.
- b) Describe the procedure using **ONE** of the methods in a), to construct a modular fence.

The aim of this question was to assess the candidate's knowledge of fence specifications and understanding of fence construction methods.

In part a), marks were awarded for specifying three distinctly different methods. Generally this was answered well with most candidates drawing a sketch diagram to illustrate their answer. Suitably labelled and dimensioned, this was sufficient to gain full marks. Three methods include:

- 1- Soil/aggregate/hardcore rammed around post,
  - 2- Concrete (with specification) rammed around post,
  - 3- Driven – i.e. spiked post driven in with Drivall or tractor mounted post rammer.
- Other answers could include metal spike, concrete spur etc, suitably explained.

A suitable modular fence chosen by most candidates was some form of overlap or interwoven panel. Marks were awarded (dependant on actual fence style chosen) for inclusion of: establishing line, clearing and marking out, setting up line, determining positions of posts and end to start, excavating holes to appropriate dimensions and erecting posts with a suitable method from a) in an appropriate order, attaching panels, ensuring line level and plumb throughout, attaching caps etc.

Note posts should not all be secured before panels are attached for most modular fences, many candidates failed to observe this. The specification and erection process of such a fence was often vague with little information on types of materials, their dimensions, and methods of fixing. Few answers addressed the problem of panel fences on sloping ground and how this will affect the erection process.

- Q2**
- a) Describe **THREE** factors that need to be considered when placing rocks in a rock garden.
  - b) Identify **FOUR** hazards when constructing a rock garden and state **ONE** method of reducing the risk for **EACH**.

The aim of this question was to assess the candidate's knowledge of rock garden construction and the safe handling of rocks.

In part a), marks were awarded for explanations of variations of the following factors:

- drainage (i.e., sloping rocks to shed water),
- slope (or lack of) of land and type of feature required (outcrop, water garden, scree etc),
- provision of planting environments,
- strata,
- identification of bedding, front and top faces of rocks,
- positioning rocks to look connected below ground.

Many candidates were able to describe three factors adequately although many had the old fashioned concept of burying  $\frac{3}{4}$  of the rocks – this would be considered costly and wasteful these days.

In part b), most candidates were able to identify appropriate hazards including:

- injury from heavy lifting,
- injury from trapping fingers (arms and legs),
- cuts, grazes from sharp edges,
- working on sloping/muddy ground – slips etc,
- various hazards in use of machinery/lifting apparatus.

Methods of reducing risks appropriate to each named hazard included: correct manual handling procedures, signage and/or cordoning/fencing area, provision of boards to work off, appropriate training, PPE with suitable examples (usually steel toe-capped boots and gloves, but this needed expanding if heavy lifting gear or machinery was advocated).

**Q3** Describe the correct handling, storage and reinstatement of soil during construction works.

The aim of this question was to assess the candidate's knowledge of the correct handling, storage and reinstatement of soil during construction works.

Marks were awarded for correctly describing appropriate methods to include:

- tools and equipment for job to prevent damage to soil structure (i.e. compaction),
- segregation of subsoil/topsoil,
- weed eradication/control/timing prior to during moving operations (removal of other debris – including builder's rubbish),
- storage conditions, dimensions/depths of storage heaps,
- length of storage times,
- storage conditions to maintain fertility, OM status etc,
- drainage during storage,
- wind protection during storage,
- weed control methods during storage – covering, green manure, chemical, hand weeding. Other maintenance requirements during storage,
- conditions for re-instatement, preparation of subsoil to receive topsoil (alleviation of pans, compaction),
- methods of reinstatement to prevent settlement, compaction, contamination,
- re-instatement to be appropriate to crop/plant type,
- possible bio-security issues.

This was generally well answered but candidates tend to limit their thinking in terms of small domestic gardens and the use of hand tools.

- Q4**
- a)
    - i) Explain the term 'temporary bench mark' and,
    - ii) State where it typically would be located on a site.
  - b) Describe how existing and proposed levels are indicated on plan drawings.
  - c) Explain how the new levels are set out on site.

The aim of this question was to assess the candidate's knowledge of basic techniques and terminology for setting out levels on a site.

Marks were awarded for stating that a TBM is an arbitrary datum level height (usually given a value of 50m or 100m) established on a site as a reference for all other levels measured/established on that site. Most candidates were able to state what it meant but better answers explained in more depth to gain a higher mark.

It is typically located on the damp-proof course level on a house or a door step (must be a permanent and accessible horizontal feature). The importance of the TBM referring to a level was often omitted and suggesting locations such as the corner of a building was not adequate unless a horizontal reference point was stated.

In part b) marks were awarded for stating that existing spot levels are indicated by a cross alongside the value of the level in relation to the site datum (TBM) enclosed in brackets or with a square box around it. Proposed levels are indicated in the same way but without the brackets or box. This was poorly answered in almost all cases - some candidates rightly stated that levels may also be shown as contours, but there was a lot of confusion as to whether they should be shown with solid or dotted lines.

In part c), marks were awarded for explaining the following:

- selection and identification of at least one item of appropriate equipment, spirit level/straight edge, Cowley level, water level, quickset (optical, automatic) level, laser level,
- method(s) of referring back to datum level using above chosen equipment,
- insertion of pegs, setting profiles, string lines, boning rods etc – to create dead levels and falls.

This part was also not well answered in many cases; although appropriate equipment was identified, the correct use of it was very vague in most cases.

- Q5**
- a) State **TWO** advantages and **TWO** disadvantages of using a butyl liner compared with concrete in the construction of a formal pond.
  - b) Describe a range of alternative finishes to hide the construction material of a formal pond.

The aim of this question was to assess the candidate's knowledge of pond construction materials, and their understanding of a range of pond construction methods.

In part a), most candidates were able to identify two advantages and disadvantages but then didn't always provide enough information as to how they had come to these answers, which made it a bit vague. For instance many included "expensive" or "relatively expensive" on either side (and possibly both), but this would need justifying as both methods of construction are likely to be costly depending on the specification. There was also some discrepancy as to the lifespan of either material. Advantages for butyl included:

- easily forms an informal shape, no formwork required,
- less excavation,
- lower carbon footprint, more environmentally friendly,
- less toxic to wildlife,
- easier to repair.

Disadvantages included:

- difficult to hide folds,
- can puncture (prone to vandalism),
- overflows (and other plumbing) difficult.



Part b) required an explanation of the problems that may be encountered with construction materials being visible, such as folds in butyl liners or exposed concrete above and below water level, especially with moving water. The answer should include some examples of how this could be remedied. Some examples of finishes include:

- overhanging stone, pc concrete coping,
- stainless steel or timber extending down into water,
- liner encased in double skin wall,
- rendered concrete painted black,
- use of cobbles to cover material on bottom/shallow slopes.

Few candidates could describe a wide range and mostly they described various forms of coping. Some answers suggested that plants would cover the edges; this should not be relied on as a design solution.

- Q6**
- a) State **ONE** type of flexible paving and **ONE** type of rigid paving suitable for a domestic driveway.
  - b) Describe the installation procedure for the foundations of an area of block paving on a consolidated sub-grade.

The aim of this question was to assess the candidate's knowledge of paving terminology and specifications and their understanding of paving construction methods.

Examples of flexible paving include block paving and gravel. Higher marks were gained with further qualification. Block paving could be laid on a rigid bed so this needed to be clarified as to being laid on a sand bed. Most answers for rigid paving were "concrete", again this needed defining as in-situ continuous concrete is rigid while precast concrete units could be flexible, as in block paving. Both surfaces also needed to be suitable to withstand light traffic on a domestic driveway, concrete slabs laid on a flexible bed would not.

Note that part b) of the question only asks for installation of the foundations not ground preparation or the laying of the wearing course, many candidates wasted time by including one or both.

Key points to be included are:

- setting out area and particularly levels to allow adequate drainage falls and allowance for the incorporation of a suitable edge (installation not asked for),
- geotextile membrane – specification and reason,
- suitable base material(s) correctly identified and specified i.e. scalplings, Dot Type 1, hardcore,
- dimensions – i.e. thickness of foundation,
- consolidation – methods and equipment,
- blinding – materials and reason.

Diagram(s) would help if clearly drawn. Dimensions and specifications of materials were often insufficiently quoted to adequately identify them or the proposed construction technique, and were sometimes omitted completely.

**Q7** Explain the purpose of **EACH** of the following in relation to a garden wall:

- i) coping;
- ii) bond;
- iii) damp proof course;
- iv) weep holes;
- v) pointing.

The aim of this question was to assess the candidate's knowledge of wall terminology and specifications and their understanding of a range of wall construction methods.

The term 'coping' was mostly well understood in that it is to keep moisture (weather) out of the top of the wall and prevent deterioration from weathering and frost; higher marks were gained for additions of further purposes – i.e. to finish off wall aesthetically, to strengthen top of wall, to encourage/discourage people to sit/walk on wall.

In part ii), again most candidates could state one or two purposes of the bond but higher marks were gained by more detailed answers. These included: to give the wall strength and to provide visual effect, fuller answers explained how and gave examples

In the case of a damp proof course candidates were required to state what it is, where it is located and why. This was usually only stated as at the bottom of a wall, 150mm above ground level. Fuller answers gained higher marks for stating that it is also found as vertical element (i.e. of retaining walls ) and under copings and gave examples of materials and how they work (i.e. impermeable membrane) in keeping damp from penetrating the body of a wall (or other structures).

The answer for weep holes required an indication of where they are located, what they do, and how they are constructed to gain full marks. They are located in retaining walls (not always only at the base) to relieve water pressure/ drainage by leaving mortar out of perpends or the inclusion of a clay/plastic pipe through the wall, with appropriate spacings and inclusion of aggregate to rear.

Marks were awarded to answers that stated the purpose of pointing is to seal wall (and paving) joints from weather and to enhance the appearance of the wall; fuller answers gained higher marks for an indication of how this is achieved by giving examples of profiles, colouring etc and explaining when it is done and why.

- Q8**
- a) Describe the construction of a concrete ramp from a patio down to a lawn in a domestic garden.
  - b) Describe an appropriate method of drainage for the base of the ramp described in a).

The aim of this question was to assess the candidate's knowledge of step and ramp requirements and specifications, and their understanding of appropriate construction methods. Also to assess the candidate's knowledge of drainage problems and methods for dealing with them.

In part a), marks were awarded for descriptions of:

- marking out – horizontally and setting levels vertically – some indication of suitable slope ratios,
- excavation and consolidation of subgrade,
- laying and consolidation of appropriate foundation – materials and dimensions,
- construction of formwork (shuttering),
- blinding/membrane and reasons,
- specification of concrete mix,
- placing of concrete,
- surface finish of concrete.

The question doesn't state if it is constructed as an in-situ concrete ramp or with pre-cast units, all candidates treated it as the former. Really the construction of such a ramp is no different from building a concrete path on level ground. The concrete would need to be specified with a higher slump to prevent it flowing down the slope while being placed, and maybe a non slip finish would need a higher specification. Although not specified some candidates stated the needs for disabled users. Particularly in a public place this would be covered by building regulations, but probably not in a domestic garden. There was some vagueness as to recommended slope ratios and few candidates could quote these against proposed lengths of the ramp. There were some strange foundations specified involving substantial piling, this would be somewhat excessive in a domestic situation.

An appropriate method of drainage for the ramp could be the inclusion of a grated or shallow open channel across the width of the bottom of the ramp leading to an appropriate drain or soakaway. In many cases answers were very vague, poorly specified and were accompanied by poor diagrams. In many cases, unless the ramp is very large, improving the drainage of the lawn will be sufficient in a domestic situation. Some answers included a substantial shingle filled interceptor drain which would not be suitable for wheeled traffic, which is often why a ramp is incorporated rather than steps in the first place.

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