Including Examiners comments

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R3113

UNDERSTANDING THE SETTING OUT & CONSTRUCTION OF LANDSCAPING ELEMENTS IN THE GARDEN

Level 3

Thursday 13 February 2020

13:40 – 15:05

Written Examination

Candidate Number: .....

Candidate Name: .....

Centre Name: .....

IMPORTANT – Please read carefully before commencing:

i) The duration of this paper is **85** minutes;
ii) **ALL** questions should be attempted;
iii) **EACH** question carries **10 marks**;
iv) Write your answers legibly in the spaces provided. It is **NOT** necessary that all lined space is used in answering the questions;
v) Use **METRIC** measurements only;
vi) Use black or blue ink only. Pencil can be used for drawing purposes only. Ensure that all diagrams are labelled accurately with the line touching the named object;
vii) Where plant names are required, they should include genus, species and where appropriate, cultivar;
viii) Where a question requires a specific number of answers; only the first answers given that meet the question requirement will be accepted, regardless of the number of answers offered;
ix) Please note, when the word **'distinct'** is used within a question, it means that the items have different characteristics or features.

Ofqual Unit Code F/507/5865

ANSWER ALL QUESTIONS

MARKS

Q1 A new 40m X 20m lawn for use as a grass tennis court is to be laid on a previously cleared site.

i) Describe **ONE** method to set out an even level over the entire area using appropriately identified tools and equipment. **7**

ii) State **THREE** limitations of the method selected in i). **3**

NOT TO INCLUDE SOIL MOVING OR STORAGE PROCEDURES

i)……

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MARKS

ii)

Total Mark

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MARKS

Q2 a) Give specifications for the foundations of a low brick free-standing garden wall. **6**

b) State **TWO** methods of improving the load bearing capacity of the foundation in unstable ground conditions. **2**

Please see over/…..

MARKS

c) Describe **ONE** method of providing a damp-proof course in a garden wall to prevent rising damp. **2**

NOT TO INCLUDE SETTING OUT OR CONSTRUCTION OF THE WALL

Total Mark

Please turn over/…..

MARKS

Q3 Complete the following risk assessment for the operation of an electric concrete mixer by completing the table below.

Distinct hazard	Hazard-specific precaution to minimise the risk of injury	
Hazard number 1.		**2**
Hazard number 2.		**2**
Hazard number 3.		**2**
Hazard number 4.		**2**
Hazard number 5.		**2**

Total Mark

Please see over/…..

PLEASE DO NOT USE THIS PAGE

TURN OVER FOR THE NEXT QUESTION

MARKS

Q4 You have carried out a site assessment for the construction of a free draining area for a new vegetable garden and found it to have imperfect drainage.

a) Describe the construction method for raised beds on the site. **4**

b) Describe **THREE** additional methods to improve the drainage of the site. **6**

a) .....

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MARKS

b) .....

Total Mark

Please turn over/…..

MARKS

Q5 a) Describe **ONE** type of strained wire fence suitable as a barrier to keep a small dog within a garden. **4**

Please see over/…..

MARKS

b) Describe the sequence of construction of the fence described in a) on a cleared level site to form a barrier 10m long. **6**

Total Mark

Please turn over/…..

MARKS

Q6 Describe the construction of an in-situ concrete path 1m wide by 10m long on a prepared foundation under the following headings:

i) shuttering **3**
ii) movement joints **2**
iii) concrete specifications **2**
iv) surface finish **1**
v) curing **2**

i)……

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Total Mark

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MARKS

Q7 a) Give the specifications for **ONE** example of **EACH** of the following materials used for the rigid construction of a garden surface:

i) pre-cast concrete slab **4**
ii) claybrick **4**

i) .....

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ii) .....

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MARKS

b) Describe a bedding method suitable for rigid unit paving. **2**

Total Mark

Please turn over/…..

MARKS

Q8 a) State suitable materials and dimensions for a short flight of steps under the following headings:

i) treads **3**
ii) risers **2**

i)……

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ii)……

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Please see over/…..

MARKS

b) State **FIVE** safety features that could be incorporated into a flight of steps. **5**

Total Mark

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R3113

UNDERSTANDING THE SETTING OUT & CONSTRUCTION OF LANDSCAPING ELEMENTS IN THE GARDEN

Level 3

Thursday 13 February 2020

Candidates Registered	**65**		**Total Candidates Passed**	**38**	**81%**
Candidates Entered	47	72%	Passed with Commendation	13	28%
Candidates Absent/Withdrawn	16	25%	Passed	25	53%
Candidates Deferred	2	3%	Failed	9	19%

General Comments

The majority of candidates attempted and completed all the questions.

Where named plant examples are asked for, **full botanical names were required** to achieve full marks: genus, species and where appropriate variety, cultivar etc. needed to be written and spelt correctly. Where genus alone was given, all species in that genus need to show the characteristic asked for to gain any credit. **Common names were NOT accepted** and misspellings were penalised. Candidates needed to use unambiguous plant examples from sources such as the RHS Plant Finder and/or the RHS A-Z Encyclopaedia of Plants together with examples given in the syllabus and avoid obscure or difficult to verify plant examples which risked being not credited.

Labels on diagrams needed to be carefully and correctly positioned to avoid ambiguity, not left hanging in mid-air. They needed to actually touch the appropriate part of the diagram. Annotations on diagrams were accepted as an alternative to description in the text as long as these were clear and answered the question. No marks were awarded for artistic merit or for unlabelled diagrams

Where a number of answers were specified in the question, e.g. ‘List **TWO** plant names’ or ‘Describe **TWO** functions’ **only the FIRST TWO answers** in a list were marked.

Candidates should take account of the command statements in the question e.g. ‘list’, ‘describe’, ‘explain’, together with the mark allocation, to judge the depth of the answer required. Extra information, even if it is accurate, does not gain extra marks.

MARKS

Q1 *A new 40m X 20m lawn for use as a grass tennis court is to be laid on a previously cleared site.*

*i) Describe **ONE** method to set out an even level over the entire area using appropriately identified tools and equipment.* ***7***

*ii) State **THREE** limitations of the method selected in i).* ***3***

NOT TO INCLUDE SOIL MOVING OR STORAGE PROCEDURES

Q1 The aim of this question is to assess the candidate's knowledge and understanding of setting out procedures and techniques using appropriate tools and equipment.

This question was not well answered in most cases with much confusion over the selection and use of appropriate instruments to establish and transfer the levels over a large area. Most candidates suggested the use of an "optical" level but it was often not clear as to what this actually was and how it would be used for setting out, and level surveying was sometimes described. Several answers named a spirit level as their chosen instrument but usually didn't appreciate the impracticality of using one over such big distances. Many answers included the use of boning rods, sometimes with no other instrument to set the levels to work from, and the understanding of the application of boning rods was poor. Most answers mentioned the need to have a datum level to work from but then didn't go on to say how this value was transferred around the site. Other suitable instruments such as laser beacons, zip levels, Cowley levels or water levels were rarely quoted. Most candidates used wooden pegs to mark the levels along with tape measures and string lines.

Some candidates described how to set out right angles for the area which was not required.

In the second part limitations, dependant on method/equipment chosen, could include:

- undulating ground prevents a clear sight or run for a string line between points (it was stated in the question that the site has been cleared so obstacles such as bushes and trees should not be an issue)
- undulating/sloping ground meaning that pegs would be too long or too short
- ground conditions unsuitable for pegs
- disturbing pegs by kicking over/machinery
- accumulated error over distance
- sagging string lines
- requires two people
- training required
- maths involved for some methods could incur human error (but this should be minimal for setting an even level, i.e. no slope to calculate)

Most answers included at least some of these points.

			MARKS
Q2	*a)*	*Give specifications for the foundations of a low brick free-standing garden wall.*	***6***
	b)	*State **TWO** methods of improving the load bearing capacity of the foundation in unstable ground conditions.*	***2***
	c)	*Describe **ONE** method of providing a damp-proof course in a garden wall to prevent rising damp.*	***2***

NOT TO INCLUDE SETTING OUT OR CONSTRUCTION OF THE WALL

Q2 The aim of this question is to assess the candidate's knowledge of materials and techniques used in the construction of foundations for garden walls.

a) Marks were awarded for appropriate specifications including

- depth of excavation
- sub-grade suitability and preparation
- width e.g. usually twice the thickness of wall
- thickness of concrete
- concrete ingredients and mix ratio

Most candidates could state suitable specifications but there was sometimes confusion with the thickness of the concrete and the depth of excavation and some concrete mix specifications were incorrect or vague.

b) Most answers included suitable methods, including:

- deeper excavation to a stable bottom
- thicker concrete
- piling/beam/trench fill methods
- addition of consolidated hardcore (or similar) at soft spots in trench
- wider foundations (or raft)
- inclusion of steel reinforcement in concrete

c) Possible methods could include:

- minimum two courses of engineering bricks to a minimum of 150mm above ground level
- plastic or bitumen membrane at a minimum of 150mm above ground level
- minimum 2 courses slate, tile or similar at a minimum of 150mm above ground level

Most candidates could give one method but often dropped marks due to the lack of detail given in the description, particularly as to where the damp course was positioned.

MARKS

Q3 *Complete the following risk assessment for the operation of an electric concrete mixer by completing the table below.*

Distinct hazard	***Hazard-specific precaution to minimise the risk of injury***	
Hazard number 1.		***2***
Hazard number 2.		***2***
Hazard number 3.		***2***
Hazard number 4.		***2***
Hazard number 5.		***2***

Q3 The aim of this question is to assess the candidate's knowledge and understanding of risk assessment procedures in identifying potential hazards with possible ways of minimising risk when using specific construction equipment.

As is usual with this type of question there was a good knowledge of risk assessment shown. However, there was often confusion as to the difference between a hazard, the possible injury (harm) it may cause and the risk of it occurring. Hence full marks could not be awarded in some cases. For example, many candidates gave "electrocution" as a hazard whereas this is actually a risk of injury (or death) happening when electricity (the hazard) is being used; back strain is the injury that could occur when lifting heavy materials or machines.

Possible hazards which could cause injury included:

- use of electricity
- moving parts/rotating drum
- machine toppling over
- cement dust
- wet concrete
- heavy machine and materials

Dependant on the hazard, precautions and good work practices included:

For use of electricity

- use of RCD (Residual Current Device)
- use of 110v machine
- avoid use in wet conditions
- check condition of leads

For moving parts of mixer

- guards in place
- avoid loose clothing
- care with loading (keep hands/tools etc clear)

For machine toppling over

- ensure stable/level ground
- machine correctly mounted

For cement dust

- avoid skin contact, appropriate clothing/footwear, gloves/goggles/face mask
- careful loading to avoid wind blow

Additional precautions for wet concrete

- signage
- avoid splashing

For heavy machinery and materials

- correct manual handling procedures
- training

MARKS

Q4 *You have carried out a site assessment for the construction of a free draining area for a new vegetable garden and found it to have imperfect drainage.*

a) *Describe the construction method for raised beds on the site.* ***4***

b) *Describe **THREE** additional methods to improve the drainage of the site.* ***6***

Q4 The aim of this question is to assess the candidate's knowledge of the materials and construction techniques for raised beds. The second part requires a knowledge of the principles and components of specified drainage solutions. Many candidates gained high marks for both parts of the question.

a) Virtually all candidates chose variations of timber railway sleepers for their raised beds; marks were awarded for descriptions of:

- basic ground preparation and consolidation
- materials
- dimensions
- fixing method(s)
- arrangements at corners e.g. bonding/overlapping etc.
  This question was mostly answered adequately with most candidates giving diagrams to particularly illustrate corner arrangements. These were not always as clear as they could have been.

b) Remedies could include:

- subsoiling/ripping to alleviate pans/capping
- soil cultivation/amelioration to improve structure
- installation of piped land drains to an appropriate outfall/soakaway to lower the water table

The most common answers involved deep cultivation and the amelioration of the soil by the incorporation of organic or inorganic materials to improve soil structure. Some candidates failed to take the vegetable garden scenario into consideration and suggested aggregate layers or membranes on, or very close to, the surface which would not allow the growing of, particularly, root crops. The descriptions of piped and french drains in a vegetable garden context was often too vague to be awarded full marks. Although the size was not given, some answers suggested mole drains which would really only be feasible on sites much larger than an average vegetable plot.

MARKS

Q5 *a)* *Describe **ONE** type of strained wire fence suitable as a barrier to keep a small dog within a garden.* ***4***

b) *Describe the sequence of construction of the fence described in a) on a cleared level site to form a barrier 10m long.* ***6***

Q5 The aim of this question is to assess the candidate's knowledge of the various components of a specified garden fence and their understanding of the sequence and techniques of its construction.

a) Marks were awarded for:

- name of fence e.g. chainlink, stock fencing, chicken/rabbit netting
- type of straining (line) wire and netting/mesh, e.g. mild steel, diameter, galvanised; plastic coated
- type of posts (straining, including the strut, and intermediates) e.g. timber; concrete; galvanised angle iron

This was not well answered in the majority of cases. Although only a description rather than a specification was asked for, materials, especially the posts and the wire, were very vaguely identified.

b) The sequence for erecting a strained wire fence was not generally well understood. Many candidates missed out a strut for the straining posts. It was not clear how the straining wires were attached to these or the intermediates, and how they would be strained. It was often not clear how the small dog would be kept in as no netting or mesh was specified, only strained wires with no indication of their spacings, and, if present, how the netting would be attached. Intermediate posts were often spaced unnecessarily close together.

MARKS

Q6 *Describe the construction of an in-situ concrete path 1m wide by 10m long on a prepared foundation under the following headings:*

i)	*shuttering*	***3***
ii)	*movement joints*	***2***
iii)	*concrete specifications*	***2***
iv)	*surface finish*	***1***
v)	*curing*	***2***

Q6 The aim of this question is to assess the candidate's knowledge of surface materials and their installation techniques for a specified feature in a garden.

The construction of an in-situ concrete path was well understood by most candidates.

i) Shuttering, typically softwood timber or ply (which doesn't need to be treated) 100-150mm X 20-30mm nailed to pegs e.g. 50X50, pointed and driven. The shuttering as specified by some candidates was sometimes a little flimsy to withstand the weight and outward force of wet concrete. Other candidates did not understand the term.
ii) Movement joints, timber (removed) or impregnated softboard strips at 3m maximum intervals across path. The purpose of these was well understood, but actual specifications and spacings were sometimes vague
iii) The majority of candidates gave an appropriate mix specification for the concrete
iv) Finish was usually described adequately as brushed; tamped or exposed aggregate

Curing – although it was appreciated that this takes time and usually means covering it, the actual concept was not appreciated in most cases. This is that the chemical reaction (hydration) must be allowed to take place unhindered for as long as possible with the water content remaining constant (especially not allowed to dry out or freeze)

MARKS

Q7 *a)* *Give the specifications for **ONE** example of **EACH** of the following materials used for the rigid construction of a garden surface:*

i) *pre-cast concrete slab* ***4***
ii) *claybrick* ***4***

b) *Describe a bedding method suitable for rigid unit paving.* ***2***

Q7 The aim of this question is to assess the candidate's knowledge of surface materials and their construction techniques for a specified paved area in a garden.

a) Most candidates could describe concrete slabs and clay bricks, although there was sometimes confusion as to the difference between a brick, a paviour and a paving block. Marks were awarded accordingly:

i) pre-cast concrete slab specifications;

- dimensions e.g. 450 X 450
- thickness e.g. 37mm
- colour e.g. buff
- finish e.g. riven
- other detail such as manufacturer/brand name

ii) clay brick specifications;

- dimensions 215 X 65 X 102.5
- use designation e.g. engineering
- colour e.g. red
- finish e.g. sand faced; wire cut; rustic; hand-made etc

Other details credited were

- region of manufacture e.g. Staffordshire and /or manufacturer/brand name
- frostproof/salt content designation e.g. FL

b) As this is rigid paving a continuous mortar bed at least 25mm thick is required with no marks given for a spot bed or a sand only bed (block paving). Marks were also awarded for appropriate mix ingredients and the ratio.

MARKS

Q8 *a) State suitable materials and dimensions for a short flight of steps under the following headings:*

i) treads ***3***
ii) risers ***2***

*b) State **FIVE** safety features that could be incorporated into a flight of steps.* ***5***

Q8 The aim of this question is to assess the candidate's knowledge and understanding of terminology, dimensions and materials for the safe construction of a flight of garden steps

Most candidates understood the meaning of treads and risers.

a) Marks were awarded for:

i) Treads

- suitable materials include pre-cast concrete slabs, clay bricks, natural stone, railway sleepers, timber decking
- average depth of tread 350mm
- width of entire tread (step) 1200mm
- nosing – 37mm oversail if appropriate

Most answers included appropriate materials but it was not always obvious how they fitted into the quoted dimensions, and in some cases would be too narrow for a comfortable footstep.

ii) Risers

- examples such as clay bricks; concrete blocks; reconstituted or natural stone, railway sleepers, timber (decking)
- average150mm high

In some candidates' answers the materials didn't always correspond with the riser height given which was too high.

b) Safety features included:

- non-slip surface
- clearly defined/marked leading edges/nosings
- slight fall on treads to prevent puddling
- well lit; provision of lighting
- provision of hand rail
- provision of appropriate landings (top, bottom and changes in direction)
- appropriate angle of pitch
- appropriate tread/riser ratio
- ensure consistent dimensions throughout flight
- adequate width for two people to pass

This part of the question was generally well answered.