Including examiner comments

R3113

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

Level 3

Thursday 27 June 2019

13:40 – 15:05

Written Examination

Candidate Number: .....

Candidate Name: .....

Centre Number/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 may be used for drawing purposes only;

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

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ANSWER ALL QUESTIONS

MARKS

Q1 a) Describe the use of offsets to set out an irregularly shaped garden feature from a plan, using a diagram where appropriate. **3**

Name of garden feature.....

Use of offsets.....

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MARKS

b) Describe the use of triangulation to set out a rectangular or square garden feature from a plan, using a diagram where appropriate. **3**

Name of garden feature.....

Use of triangulation.....

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c) Name **TWO** materials used for marking curved lines when setting out and give **ONE** different limitation for **EACH**. **4**

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MARKS

Q2 a) Explain **TWO** reasons why topsoil should be stripped from areas where hard landscape construction is to take place. **4**

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MARKS

b) Identify **THREE** different factors to be considered when selecting an area to store topsoil on site, giving reasons for your selection. **6**

Total Mark

Please turn over/…..

MARKS

Q3 a) List **FOUR** distinct purposes of excavation which could be included in the groundwork stages of a construction project. **4**

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b) State **THREE** methods to minimise potential environmental damage which should be taken into account at the construction planning stage. **3**

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MARKS

c) Identify **THREE** safety measures to be put in place on a new construction site to minimise risk of injury. **3**

Total Mark

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MARKS

Q4 a) State the specifications, including dimensions, for concrete blocks to build a 1 metre high wall to retain a level area of lawn. **3**

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b) Describe a suitable coping for the wall in a). **3**

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MARKS

c) Describe **TWO** methods of providing drainage from behind the wall in a). **4**

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MARKS

Q5 a) A modular panel fence is to be constructed as a solid boundary between two properties. Give specifications for **EACH** of the following:

i) **ONE** type of panel; **3**
ii) **ONE** type of post. **3**

Please see over/…..

MARKS

b) Describe **TWO** methods of attaching the panels to the posts. **4**

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MARKS

Q6 When completing a risk assessment for the construction of an in-situ concrete path using hand mixed concrete:

i) identify **FIVE** hazards; **5**
ii) state **ONE** method of minimising the risk for **EACH** hazard identified in i). **5**

Please see over/…..

MARKS

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MARKS

Q7 a) Describe suitable stone for the uprights of a garden arch. **4**

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b) For the arch in a):

i) give the specification for a horizontal timber beam; **4**

ii) state **TWO** methods for attaching it to the uprights. **2**

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MARKS

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MARKS

Q8 a) State an appropriate aggregate for **EACH** of the following:

i) the surface of a driveway; **1**
ii) bedding for block paving; **1**
iii) mortar for bedding paving slabs. **1**

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b) A concrete slab patio is to be laid on a garden site:

i) describe the preparation of the site prior to the installation of foundations following setting out; **4**
ii) describe appropriate foundations for this patio. **3**

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MARKS

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Including examiner comments

R3113

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

Level 3

Thursday 27 June 2019

Candidates Registered	**118**		**Total Candidates Passed**	**86**	**84%**
Candidates Entered	102	86%	Passed with Commendation	40	39%
Candidates Absent/Withdrawn	13	11%	Passed	46	45%
Candidates Deferred	3	3%	Failed	16	16%

			MARKS
Q1	a	Describe the use of offsets to set out an irregularly shaped garden feature from a plan, using a diagram where appropriate. Name of garden feature..... Use of offsets.....	**3**
	b	Describe the use of triangulation to set out a rectangular or square garden feature from a plan, using a diagram where appropriate. Name of garden feature..... Use of triangulation.....	**3**
	c	Name **TWO** materials used for marking curved lines when setting out and give **ONE** different limitation for **EACH**	**4**

The aim of this question is to assess the candidate's knowledge and understanding of setting out procedures / techniques.

Q1 a Most candidates showed an awareness of the principles of using offsets but this was poorly answered by many, often with some confusion between setting-out and surveying an irregular feature. Many did not adequately state that measurements would be taken off a plan or setting-out drawing. Marks were awarded for describing how and where baselines would be set up; then setting-out offsets at right angles from the baseline at regular or measured distances and showing how the offset distance is measured and marked with a peg or similar. Credit was given to those that showed in diagram form that offsets should be set-out at right angles from the baseline although this was not always shown clearly with appropriate annotation. Some answers were over-elaborated with unnecessary base lines when simple existing features, such as a straight wall or fence could be used. It was often assumed that the baselines themselves needed to be set up at right angles when any line between two known fixed points would suffice; or a feature could be located within a triangle of baselines which would be easier to set up accurately.

b As in a) some confused setting-out with surveying. The question could be interpreted in two ways – setting out the feature in relation to existing reference points (such as a house) or simply setting it out in a random location ensuring that correct dimensions and right-angled corners were maintained. Marks were awarded for both interpretations. There were many confusing answers; in some candidates had used diagrams but failed to explain the significant points presumably in the hope that the diagrams would be self-explanatory which in most cases they weren't. Some candidates explained at length about the use of 3/4/5 triangles to form right-angles; where this was used to help explain how the feature would be set-out once the first side had been located, marks were awarded accordingly. A few candidates took triangulation further and talked about measuring angles on the plan and then using these to set-out the feature on site – however this would be very difficult to do accurately on site and those that pursued this cumbersome technique explained it inadequately. Although the basic principles of triangulation were mostly understood, the setting up of the entire feature accurately was often poorly described.

c Most candidates scored highly in this section. Marks were awarded for suitably described materials/methods including:

- spray paint; limitations included a thick line, spray drift in windy conditions, needs a surface to apply to.
- fine sand; limitations included a thick line, short lived, not suitable for rough areas
- series of pegs; limitations included would need a lot of points marked for intricate curves, needs soft ground (unsuitable for concrete surfaces), trip hazard
- rope or hosepipe or similar; limitations included too stiff, prone to movement, trip hazard

			MARKS
Q2	a	Explain **TWO** reasons why topsoil should be stripped from areas where hard landscape construction is to take place.	**4**
	b	Identify **THREE** different factors to be considered when selecting an area to store topsoil on site, giving reasons for your selection.	**6**

The aim of this question is to assess the candidate's understanding of how topsoil should be dealt with on site in order to conserve its quality in a safe and efficient manner.

Q2 a Most candidates explained two valid reasons for stripping topsoil including: to avoid subsidence of structures/foundations due to settlement of pore space and/or organic matter; to avoid compaction due to vehicle movement and other construction operations; to avoid contamination due to, for example, fuel or chemical spillage. Many answers stated the environmental and economic value of the resource and the need to preserve it and were awarded marks as long as this was adequately explained; just to say that topsoil is expensive was not a sufficient reason on its own.

b Marks were awarded for:

- size of area (related to amount of soil) to avoid over high piles
- accessibility to allow addition/removal without damaging other features, or to avoid excessive haul routes
- secure to prevent unauthorised machine access causing damage
- well drained to prevent waterlogging / anaerobic conditions
- sheltered to prevent wind erosion / weed seed ingress
- not near watercourse to prevent pollution / runoff / erosion
- level area to reduce excessive run off

Most candidates were able to state three factors although a common fault was to confuse the method of storage with location. Consequently, no marks were awarded for candidates who included stating maximum height/angle of repose (unless this was related to a location with adequate area to allow the topsoil pile to be within limits of height/angle), covering topsoil, or for locations that were under shelters as this is not feasible in most landscape situations

MARKS

Q3 a List **FOUR** distinct purposes of excavation which could be included in the groundwork stages of a construction project. **4**

b State **THREE** methods to minimise potential environmental damage which should be taken into account at the construction planning stage. **3**

c Identify **THREE** safety measures to be put in place on a new construction site to minimise risk of injury. **3**

The aim of this question is to assess the candidate's understanding of the necessity to plan a landscape construction project at the initial ground work stages with particular reference in part b) to protecting the natural environment. Part c) requires a knowledge of risk assessment and appropriate precautions which could be put in place to ensure safe working conditions are maintained on a site.

Q3 a Most candidates were able to state four purposes of excavation which included:

- dealing with sub/topsoil
- re-contouring/terracing etc
- installation of drainage
- installation of foundations for structures
- installation of underground services
- installation of irrigation system

Marks were not awarded for such answers as investigating location of pipes and other services, nor for carrying out soil pH tests or digging soil profile pits since these would be operations undertaken in site investigation and analysis. Likewise, no marks were given to those who stated removal of buried objects, tree roots etc. as this is considered to be initial clearance under site preparation rather than groundworks. This part was generally well-answered with most candidates stating use of recycled/locally sourced materials; re-using materials, planning the use of machines to avoid compaction of topsoil, storage of hazardous materials etc. Marks were not awarded to those who stated carrying-out tree surveys to find if trees had Tree Preservation Orders (TPO's) or wildlife surveys as this should be known prior to the construction phase. However, credit was given where candidates qualified these statements by stating the practical methods by which this information would be used for example by marking or fencing-off trees protected by TPO's, and scheduling works to avoid operations that would disturb nesting birds.

b This section was well answered with most gaining full marks. Answers included:

- Erection of fencing
- Lockable site gates
- Lockable storage areas and site huts
- Signage indicating potential hazards (e.g. deep excavations, vehicle movement)
- Measures in place to ensure appropriate PPE is mandatory (e.g. hard hats, boots)
- Employment of trained personnel
- Risk assessment in place

			MARKS
Q4	a	State the specifications, including dimensions, for concrete blocks to build a 1 metre high wall to retain a level area of lawn.	**3**
	b	Describe a suitable coping for the wall in a).	**3**
	c	Describe **TWO** methods of providing drainage from behind the wall in a).	**4**

The aim of this question is to assess the candidate's knowledge of materials and techniques used in the construction of garden walls. The third part of the question relates to the principles and components of drainage systems for retaining walls.

Q4 a This part of the question was generally not well answered with few correct or complete specifications given. Candidates gave a variety of sizes of concrete blocks; a typical block is based around co-ordinating brick sizes, such as 450 x 225 x 225 (hollow) or 450 x 225 x 100 (solid), but other commercially available sizes were acceptable. Few candidates specified dense aggregate but many did state if the blocks were hollow (often with the aid of a diagram); "breeze blocks" were sometimes quoted but there was not clear understanding shown as to what this term refers. Other marks were awarded for colour and surface finish of the blocks. Some candidates gave specifications for the wall itself, including the foundations and mortar; marks were not awarded for this.

b As with a) this section yielded a variety of answers and again there were very few complete specifications. A common failing was not to specify the width of the coping in relation to the wall thickness, although most stated the need for an oversail, and its purpose, quoting a dimension for this alone.

c Many candidates were able to describe two suitable drainage methods but these were often accompanied by poor diagrams which showed little understanding of the principles. With piped drains or soakaways situated behind the wall it was often not clear how the excess water would be dispersed. Marks were lost by those who failed to specify where weep holes would be located in a wall.

Q5 a A modular panel fence is to be constructed as a solid boundary between two properties. Give specifications for **EACH** of the following: **MARKS**

i) **ONE** type of panel; **3**
ii) **ONE** type of post. **3**

b Describe **TWO** methods of attaching the panels to the posts. **4**

The aim of this question is to assess the candidate's knowledge of the various components and techniques employed in the construction of a garden fence.

Candidates in general understood the concept of a modular fence panels but some did not read the question and gave specifications for a non-modular close boarded fence constructed from components in situ. Marks were awarded in each section for:

Q5 a

i) specifications of a suitable panel:

- suitable type of timber e.g. tanalised softwood
- configuration e.g. overlap, interwoven
- size of panel e.g. 1.8m x 1.8m (ideally a standard commercially available size, but could be bespoke if adequately described as such)
- surface finish (e.g. wavy edge) and colour
- profile of top of panel and/or capping strip
- FSC certification
-

Many candidates' answers were somewhat vague and didn't provide sufficient detail for higher marks.

ii) specifications of a suitable post:

- material e.g. timber (pressure treated softwood) or concrete (pre cast)
- length e.g. 2.4m
- dimensions e.g. 75 x 75
- profile e.g. slotted or square

b Most candidates specified appropriate sectional dimensions of posts but some either omitted to specify the length of post or specified an inappropriate length for the height of fence described in i), some candidates described the installation of posts and were not awarded marks for their efforts.

This was well-answered by the majority of candidates with most describing the use of brackets (some lost marks by not stating that the panel needs securing to the bracket – not just bracket to post). Other methods included use of nails or screws (but were not given full marks if the length or type were not mentioned). Several candidates described the use of arris rails with concrete posts and then fastening the panel to the horizontal rails; although not conventional this could be acceptable but it was not clear if this was describing a non-modular fence in these cases.

Q6 When completing a risk assessment for the construction of an in-situ concrete path using hand mixed concrete: **MARKS**

i) identify **FIVE** hazards; **5**
ii) state **ONE** method of minimising the risk for **EACH** hazard identified in i). **5**

Q6 The aim of this question is to assess the candidate's understanding of risk assessment procedures by the identification of potential hazards, with appropriate precautions to reduce the risk of injury when carrying out a specific construction project.

i) Many candidates gained full marks for this section by describing hazards such as cement dust in eyes, inhalation of dust, chemical burns from cement or concrete. Although most stuck to hazards relating to the mixing of the concrete, marks were also available for identifying those relating to the process of laying the concrete path. Some did not read the question fully and described hazards relating to use of a concrete mixer. Full marks where not awarded if candidates failed to qualify an object by stating the actual hazard e.g. heavy cement bags are not in themselves a hazard unless the operative is required to physically lift them.

ii) Many candidates again gained full marks.

Some chose to state the method immediately after the hazard they identified in a) - this was satisfactory. Others chose to construct their own table of hazards and risk reducing methods – again this was acceptable. However, with those that didn't adopt these approaches it was not always easy to relate parts i) and ii). Some precautions stated by candidates were vague; stating 'PPE' was not a sufficient answer.

			MARKS
Q7	a	Describe suitable stone for the uprights of a garden arch.	**4**
	b	For the arch in a):	
		i) give the specification for a horizontal timber beam;	**4**
		ii) state **TWO** methods for attaching it to the uprights.	**2**

Q7 a The aim of this question is to assess the candidate's knowledge and understanding of materials and construction techniques for a specific garden structure

This was a poorly answered question generally. Some candidates discussed the 'qualities' that would make a stone suitable for building the pillars of a pergola rather than specifying a suitable stone. Those that did well specified a suitable stone such as York sandstone, Welsh slate, Purbeck limestone, etc (no marks given for reconstituted stone) complete with sizes, colour and finish. Although technically feasible, some candidates described monolithic uprights which, by the dimensions given would be incredibly heavy.

b As with part a) this was poorly answered by many. The type of timber was mostly suitable although the specifying of dimensions was generally inappropriate or not complete.
This section yielded an array of novel approaches. Common methods involved using bolts either set into the pillar and then the cross-beam located and secured over them, or by drilling through the beam into the post. Some described building the pillar around the beam in some fashion which was acceptable. Although in most cases the principles were sound, answers were let down by lack of detail or inappropriate fixing methods such as the bolts or screws specified being too short or flimsy.

Q8 a State an appropriate aggregate for **EACH** of the following: **MARKS**

i) the surface of a driveway; **1**
ii) bedding for block paving; **1**
iii) mortar for bedding paving slabs. **1**

b A concrete slab patio is to be laid on a garden site:

i) describe the preparation of the site prior to the installation of foundations following setting out; **4**
ii) describe appropriate foundations for this patio. **3**

The aim of this question is to assess the candidate's knowledge of materials appropriate to the construction of landscape surfaces and the ground preparation procedures and foundation requirements prior to installation.

Q8 a Most candidates were able to correctly identify suitable aggregates for each situation but in many cases the answers were too vague to receive full marks; "gravel" was insufficient for part i) without some further qualification such as 10mm (pea) shingle or Breedon gravel; and "sand" for parts ii) and iii) needed the addition of sharp (grit) or soft (builders) as appropriate. No marks were awarded for Tarmac in i) or concrete in ii). It was only the specification for the appropriate aggregate that was required but some candidates wasted time by giving mix ratios or thickness of the bed.

b In part i) many candidates did not fully read the question and consequently wasted time describing the setting-out of the feature. Expected answers included description of method of clearance of debris/vegetation from the site and the method and appropriate depth of excavation and removal of top soil and subsoil and subsequent consolidation of the subgrade.
Some candidates described more than ground preparation and started to describe the sub-base which forms part ii) of the question.

In part ii) full marks were awarded to those who stated the type of sub-base and an appropriate depth, the method of compaction and the possible use of a geotextile membrane and where it would be located. Marks were not given to those who stated that the membrane's purpose was weed suppression.

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