

0174-510 March 2022

Level 3 Advanced Technical Extended Diploma in Horticulture (1080)

Level 3 Horticulture – Theory Exam (2)

Question 1

State the **full name** of **two** professional bodies that represent sports turf professionals. (2 marks)

Acceptable answer(s):

- The British and International Golf Greenkeepers Association (BIGGA).
- Grounds Management Association (GMA).

Full names must be provided.

1 mark for each answer, up to a maximum of 2 marks.

Question 2

Summarise **three** social benefits of the sports turf industry. (3 marks)

Acceptable answer(s):

- Sports turf professionals can develop and could have the opportunity to work abroad (1)
- It can help a better understanding of equality and diversity by meeting people from different backgrounds (1)
- Improved health for players which can save costs to government (1)
- Can reduce youth crime by giving a positive approach to youngsters (1)
- Increased well-being and happiness of users/players (1)
- Community development which can improve the sports facilities within an area (1)

Accept any other suitable answer.

1 mark for each reason given, up to a maximum of 3 marks.

Question 3

Explain **three** reasons why a sports turf business needs to keep physical resource records. (6 marks)

Acceptable answer(s):

- So that sports turf surfaces are maintained to correct standards (1) and there will be less complaints by users/players (1)
- So that budgets can be monitored (1) and this will help will planning for future budgets (1)
- So that issues can be identified (1) and this will help to negate these issues occurring in the future (1)
- So that works can be monitored (1) and this will help when similar jobs need to be completed in the future (1)
- So that resource/stock levels can be monitored (1) and this identify what replacement resources/stock need to be ordered (1)
- So that irrigation/drainage pipes/cables be found (1) and new additions to irrigation/drainage systems recorded (1)

Accept any other suitable answer.

Up to 2 marks for each explanation, up to maximum of 6 marks

Question 4

Summarise **five** reasons why quality management systems are important to a sports turf business. (5 marks)

Acceptable answer(s):

- To keep employees up to date with legislative changes (1)
- To keep employees up to date with changes to the business/company (1)
- To comply with British Standards / National Standards / ISO / EN (1)
- To lower the risk of problems if quality is not achieved (1)
- To ensure that the relevant sport is played in accordance with its rules (1)
- To meet the expectation of players (1)
- To reduce waste (1)
- To maintain a consistent standard across the industry (1)
- To monitor costings (1)
- To facilitate training of staff (1)

Accept any other suitable answer.

1 mark for each point up to a maximum of 5 marks.

Question 5

- a) Name **four** financial records that are used in a typical sports turf business. (4 marks)
- b) Give **one** different reason for keeping **each** type of record named in 5a). (4 marks)

Acceptable answer(s):

a)

- Order forms (1)
- Delivery records and receipts (1)
- Invoices and sales records (1)
- Book keeping records e.g. cash analysis (1), petty cash (1), cash flow(1), budgets(1), computer accounts programmes (1)
- Basic account records e.g. trading account (1), balance sheet(1), depreciation (1)
- Taxation records e.g. VAT (1), income tax PAYE(1), national insurance contributions(1), corporation tax (1)
- Wage calculation records (1)

1 mark for each point up to a maximum of 4 marks.

b)

- Order forms - To have a record of what was ordered in case of an issue (1)
- Delivery records and receipts - To prove that a delivery has been completed in case of an issue (1)
- Invoices and sales records - To account for any lost income and in case there is an issue (1)
- Bookkeeping records - To assist with business analysis (1)
- Basic account records - To monitor business costs e.g. budget against actual spend (1)
- Taxation records - To prepare annual accounts or to provide HMRC with company tax returns (1)
- Wage calculation records - To keep an efficient payroll or in case of any issues with employee payment (1)

Accept any other suitable answer

For bookkeeping, basic accounts and taxation records the same description for 5b cannot be used.

1 mark for each point up to a maximum of 4 marks.

Question 6

Describe the concept of '*carrying capacity*' on a sports turf surface. (2 marks)

Acceptable answer(s):

The maximum level of use or activity (1) that can be supported without causing an unacceptable deterioration of the surface (1) / reduction in playing quality or user experience (1)

Up to 2 marks for description, up to maximum of 2 marks

Question 7

- a) State **three** examples of cost savings when adopting a more sustainable management programme. (3 marks)
- b) For the examples listed in 7a), give **one** different reason why **each** approach would save costs. (3 marks)

Acceptable answer(s):

a)

- Reducing of water inputs (1)
- Growing a more sustainable grass species (1)
- Growing an eco-rough area (1)
- Not collecting grass clippings (leaving them in situ) (1)
- Raising the height of cut/less intensive mowing (1)
- Recycling of green waste (1)
- Re-using of bark chippings (1)

Accept any other suitable answer

1 mark for each point up to a maximum of 3 marks.

b)

- Reducing of water inputs will promote turf root development (1)
- Growing a more sustainable grass species will help disease resistance of the grasses (1)
- Growing an eco-rough area will minimise cutting time and save labour costs (1)
- Not collecting grass clippings (leaving them in situ) will reduce fertiliser inputs (1)
- Raising the height of cut/less intensive mowing will can lead to a reduction of fungicide inputs (1)
- Recycling of green waste can be used as compost (1)
- Re-using of bark chippings so they can be used for paths on the sports area (1)

Accept any other suitable answer

1 mark for each point up to a maximum of 3 marks.

Question 8

- a) List **two** suitable grasses to establish a bowling green. (2 marks)
- b) List **one** suitable grass type to establish a rugby pitch. (1 mark)
- c) Explain **two** appropriate aftercare techniques needed to aid the establishment of a recently turfed sports area. (4 marks)

Acceptable answer(s):

a)

Bowling Green

- Chewings Fescue
- Browntop Bent
- Creeping Bent
- Slender Creeping Red Fescue

1 mark for each point up to a maximum of 2 marks.

b)

Rugby Pitch

- Perennial Ryegrass
- Smooth Stalked Meadow Grass

1 mark for each point up to a maximum of 1 mark.

Common names or botanical are acceptable.

c)

- Keep moisture levels at an appropriate level (1) to stop the turf from drying out (1)
- Mowing using a rotary mower (1) at a high setting to avoid stressing the plant (1)
- Top dressing the turf (1) will fill in any gaps between the turf (1)
- Light feeding of the turf (1) will provide nutrients to keep the turf healthy (1)
- Weed control (1) to avoid competition for the grass plants (1)
- Over seeding any bare patches on the area of turf (1) will ensure an even sward coverage (1)

Up to 2 marks for each explanation, up to maximum of 4 marks.

Question 9

- a) List **three** types of drainage system that can be installed to a sports turf surface. (3 marks)
- b) For the drainage systems listed in 9a), give **one** different reason why each would be used. (3 marks)

Acceptable answer(s):

a)

- Open ditches (1)
- Piped drainage systems (1)
- Sand slitting (1)
- Mole ploughing (1)

Accept any other suitable answer.

1 mark for each answer, up to a maximum of 3 marks.

b)

- Open ditches – Can move large quantities of water from the area (1)
- Piped drainage systems – Can cover large areas and are hidden below the turf surface (1)
- Sand slitting - Used to connect into existing pipe drainage laterals (1)
- Mole ploughing – For use on heavy soils where a clay subsoil prevents downward movement of ground water (1)

Accept any other suitable answer.

1 mark for each answer, up to a maximum of 3 marks.

Question 10

Compare and contrast **four** key differences of the soil composition between cricket pitches and USGA specification golf greens. (4 marks)

Acceptable answer(s):

- Cricket pitches are loam/clay based whereas USGA golf greens are sand based (1)
- Cricket pitches promote compaction whereas USGA golf greens help resist compaction (1)
- Cricket pitches cannot accommodate a lot of traffic whereas USGA golf greens can accommodate a lot of traffic (1)
- Cricket pitches do not drain well and hold water whereas USGA golf greens have effective drainage (1)

Accept any other suitable answer.

1 mark for each answer, up to a maximum of 4 marks.

Question 11

Describe **two** weather-related factors that influence the timing of turf renovation activities. (4 marks)

Acceptable answer(s):

- Heavy rainfall can wash out grass seed (1) so seed would be wasted (1)
- Heavy rainfall can cause further damage to the turf surface (1) when working on it (1)
- Winds can cause sand blast (1) which could displace sand used for renovation (1)
- Hot weather can dry out recently laid turf (1) so extra irrigation would need to be applied (1)
- Hot weather (1) can cause fertiliser to scorch the turf surface (1)

Accept any other suitable answer.

Up to 2 marks for each description, up to maximum of 4 marks.

Question 12

Explain **three** benefits of using seed to establish and renovate sports turf areas. (6 marks)

Acceptable answer(s):

- Seeding is more cost effective (1) so can be used more economically over larger areas (1)
- There is a wider choice of grass species available when using seed (1) so this is better for specific requirements (1)
- Seed can be stored for months in a dry, cool place (1) so the timing of seeding can be delayed (1)
- Seed can be used to cover inaccessible areas or steep banks (1) so it is useful if sources of irrigation are a problem (1)
- There is not a great deal of aftercare methods needed for seed (1) so it is useful if time/labour requirements are an issue (1)

Accept any other suitable answer.

Up to 2 marks for each explanation, up to maximum of 6 marks

Question 13

Name **six** aftercare requirements to help newly installed or renovated areas during the first three to six months after establishment. (6 marks)

Acceptable answer(s):

1 mark for each answer, up to a maximum of 6 marks.

- Rolling (1)
- Topdressing (1)
- Fertiliser treatment (1)
- Weed control (1)
- Disease control (1)
- Irrigation (1)
- Stone removal (1)
- Protection (1)
- Mowing (1)

Question 14

Evaluate the range of maintenance activities that are used in the management of **named** sports turf surfaces and explain why these activities would be chosen. (15 marks)

Indicative content

Section 1 – essential maintenance activities to be considered

- Mowing
- Aeration
- Scarification
- Top-dressing
- Switching/brushing
- Fertiliser application
- Pest, disease and weed management

Section 2 – specialised activities

- Verti-cutting
- Rolling
- Use of plant growth regulators

Section 3 – considerations of machinery

Section 4 – factors linked to the specific surface

- Soil conditions
- Weather conditions
- Seasonal factors
- Playability, Wear and Carrying capacity

Section 5

- Sustainability and resource usage.

Band 1: 1-5 marks

A basic evaluation of the range of maintenance activities that are used in the management of sports turf surfaces. A limited understanding of why different activities would be chosen. Higher marks in this band will be obtained by candidates that are able to evaluate a greater number of maintenance activities.

Band 2: 6-10 marks

An in-depth evaluation of the range of maintenance activities that are used in the management of sports turf surfaces. A good understanding of why different activities would be chosen, and the benefits of each activity will be considered. Higher marks in this band will be obtained by candidates that are able to discuss a greater range of benefits for each activity considered.

Band 3: 11-15 marks

A thorough evaluation of the range of maintenance activities that are used in the management of sports turf surfaces with consistent use of technical terminology throughout. An excellent understanding of why different activities would be chosen, and the benefits and limitations of each activity will be considered. The effect on the playing surface of not carrying out maintenance activities will also be explored. Higher marks in this band will be obtained by candidates that are able to discuss a greater range of benefits and limitations for each activity considered.