Royal Horticultural Society

Sharing the best in Gardening

Including Examiners comments

R2113

UNDERSTANDING THE PRODUCTION OF OUTDOOR VEGETABLES & FRUIT

Level 2

Tuesday 20 June 2017

13:30 – 14:20

Written Examination

Candidate Number: .....

Candidate Name: .....

Centre Number/Name: .....

IMPORTANT – Please read carefully before commencing:

i) The duration of this paper is **50** minutes;

ii) **ALL** questions should be attempted;

iii) **EACH** question carries **10 marks**;

iv) Write your answers legibly in the lined space 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;

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.

ANSWER ALL QUESTIONS

MARKS

Q1 a) Describe the soil cultivation technique 'double digging' used when producing a seed bed for sowing an outdoor vegetable crop. **6**

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b) Name **TWO** distinct propagation methods used in the production of vegetable crops, giving a named vegetable cultivar for **EACH**. **4**

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Total Mark

Please see over/…..

MARKS

Q2 a) Describe the production of a crop of runner beans under **EACH** of the following headings:

i)	named cultivar;	**1**
ii)	sowing;	**3**
iii)	**ONE** support system;	**3**
iv)	harvesting.	**3**

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Total Mark

Please turn over/…..

MARKS

Q3 Name **ONE** disease and **ONE** distinct control measure for **EACH** of the following vegetables by completing the table below.

Vegetable	Disease	Control measure	
Leeks			**2**
Winter Cabbage			**2**
Onions			**2**
Potatoes			**2**
Lettuce			**2**

Total Mark

Please see over/…..

MARKS

Q4 a) Describe the outdoor production of a crop of courgettes under **EACH** of the following headings:

i) named cultivar; **1**
ii) sowing; **4**
iii) harvesting. **3**

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b) Name **ONE** pest of courgettes. **1**

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c) State **ONE** symptom of the pest named in b). **1**

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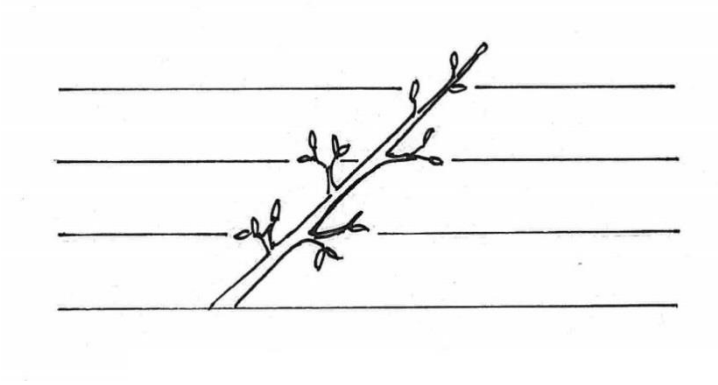
Total Mark

Please turn over/…..

MARKS

Q5 a) For **EACH** of the top fruit diagrams shown below, name:

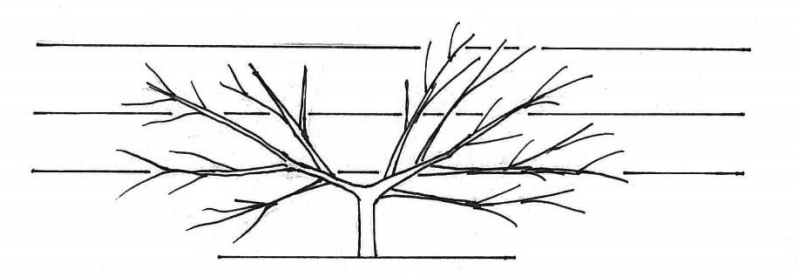
i) the training system; **2**
ii) an appropriate fruit; **2**
iii) a suitable rootstock. **2**



i)……

ii)……

iii)……



i)……

ii)……

iii)……

b) Describe how weed control can affect quality and yield of a top fruit crop. **4**

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Total Mark

Please see over/…..

MARKS

Q6 Describe the production of a crop of summer fruiting (early/mid-season) raspberries under **EACH** of the following headings:

i) cultivar selection; **3**
ii) planting; **4**
iii) pruning. **3**

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Total Mark

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The Royal Horticultural Society, Wisley, Woking, Surrey GU23 6QB.
Charity Registration Number: 222879/SC038262

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UNDERSTANDING THE PRODUCTION OF OUTDOOR VEGETABLES & FRUIT

Level 2

Tuesday 20 June 2017

Candidates Registered	**788**		**Total Candidates Passed**	**476**	**73.34%**
Candidates Entered	649	82.36%	Passed with Commendation	237	36.52%
Candidates Absent/Withdrawn	127	16.12%	Passed	239	36.82%
Candidates Deferred	12	1.52%	Failed	173	26.66%

Senior Examiner's Comments:

1 Candidates should be able to demonstrate a good range of plant knowledge and be able to give accurately named plant examples where appropriate. Common names and generic names are often too vague and cannot be rewarded in the positive manner that genus, species and where appropriate, variety/cultivar can. This is particularly important when answering questions relating to particular (named) plant(s). Marks can only be awarded for these narratives where the example(s) are correctly and fully identified.

2 Candidates must be able to display accurate knowledge of the technical terms and concepts detailed in the syllabus, in the context of horticulture and also be aware that wider interpretation will not be rewarded. The examination should be regarded as a possible introduction to higher level studies, which will only be open to those who are in possession of a clear understanding of the horticultural terms and concepts which are current.

3 The introductory rubric given on the first page of each question paper should be read carefully by candidates. At each examination there are a significant number of candidates who ignore or misread the instructions given and consequently may not perform as well as they could have done.

4 Candidates should pace themselves during each paper. The most successful candidates allow sufficient time to read the question thoroughly before answering it and also take time to read through their answers. They should take care to write as legibly as possible, so that the examiner is in no doubt about what is intended.

5 Candidates need to interpret key words within questions, particularly those such as ‘state’, ‘list’ and ‘describe’. Questions requiring descriptions or explanations obviously require a more detailed answer than those requiring a list.

6 It is important to ensure that responses to questions are to the point. Candidates should bear in mind that small sketches might be used to convey information more succinctly than words.

7 Successful candidates ensure that their answers are focused and to the point. It is disappointing when they cannot be rewarded for their efforts because the answer is irrelevant to the particular question. Candidates should take note of the mark allocation for specific sections and allocate their time and efforts accordingly.

8 Diagrams can enhance an answer and where appropriate can replace detailed descriptions. They should be large, clear and well annotated, ensuring that labels are properly attached to the features they describe. Diagrams should preferably be in pencil. Colour may be used successfully but only where it is relevant to the answer.

9 In each examination it is clear that some candidates are ill prepared to answer papers of the type set. It is essential that candidates have the opportunity to practice questions. Ideally some papers should be answered in a time constrained situation. Appropriate feedback must, in any case be provided.

MARKS

Q1 *a) Describe the soil cultivation technique 'double digging' used when producing a seed bed for sowing an outdoor vegetable crop.* ***6***

*b) Name **TWO** distinct propagation methods used in the production of vegetable crops, giving a named vegetable cultivar for **EACH**.* ***4***

Q1a) The majority of candidates were able to describe the cultivation technique 'double digging' and were awarded full marks. Suitable answers included the following points:

- The area to be dug is marked out
- A trench 30cm deep is dug out
- The soil from the first trench is placed at the opposite end of the area to be dug
- The bottom of the trench is forked over to a depth of 30cm
- Bulky organic matter is incorporated into the forked over area
- The next trench is dug, inverting the soil onto the bulky organic matter in the previous trench
- The method is continued until the whole area has been dug
- Fill the final trench with the soil from the first trench

Q1b) A range of propagation methods were named by the best candidates who gained maximum marks. These included:

- Direct sowing in drills e.g. carrot 'Autumn King'
- Transplanting from seed beds e.g. Cabbage 'Hispi'
- Sowing seeds in modules e.g. Courgette 'Defender'

MARKS

Q2 *a) Describe the production of a crop of runner beans under **EACH** of the following headings:*

i)	*named cultivar;*	***1***
ii)	*sowing;*	***3***
iii)	***ONE** support system;*	***3***
iv)	*harvesting.*	***3***

Q2a) Many candidates were able to describe the production of a crop of runner beans and were awarded full marks. Acceptable answers included:

i) **Named Cultivar** - 'Red Rum', 'Enorma'.

ii) **Sowing** – Direct sown outdoors in May, 30-60cm apart and 5cm deep or station sown outdoors in May, 30-60cm apart and 5cm deep or sown indoors mid to late spring, one or two seeds per pot and 5cm deep.

iii) **Support System** – A wigwam is made from 2.4m tall canes or poles which are tied tightly together at the top with one or two plants planted at the base of each cane/pole.

Candidates who described an 'A' frame were also awarded marks.

iv) **Harvesting** - Runner beans are harvested from July/August until the first frosts. Runner beans must be harvested on a regular basis to ensure a continuous harvest. Runner beans are harvested when they are 15-20cm in length and should be carefully pulled from the stalk.

Candidates who described the storage and processing of runner beans could not be awarded any marks as this was not asked for.

MARKS

Q3 *Name **ONE** disease and **ONE** distinct control measure for **EACH** of the following vegetables by completing the table below.*

Vegetable	***Disease***	***Control measure***	
Leeks			***2***
Winter Cabbage			***2***
Onions			***2***
Potatoes			***2***
Lettuce			***2***

Q3) Most candidates were able to name appropriate diseases and control measures for the specific vegetables and gained maximum marks. Suitable answers included:

Leeks – are affected by Leek rust which can be controlled by planting resistant cultivars, practicing crop rotation and burning/destroying badly infected leaves.

Winter Cabbage – is affected by Club root which can be controlled by raising the pH of the soil to pH 7 or 7.5 by liming or implementing a very long crop rotation.

Onions – are affected by Onion white rot which can be controlled by digging up and burning infected plants or sowing pelleted seed which contains a fungicide.

Potatoes – are affected by Blight which can be controlled by growing blight resistant cultivars or by cutting down and burning the infected stems and leaves.

Lettuce – are affected by Downy mildew which can be controlled by growing resistant cultivars or sowing the seed thinly.

MARKS

Q4 *a) Describe the outdoor production of a crop of courgettes under **EACH** of the following headings:*

i)	*named cultivar;*	***1***
ii)	*sowing;*	***4***
iii)	*harvesting.*	***3***

*b) Name **ONE** pest of courgettes.* ***1***

*c) State **ONE** symptom of the pest named in b).* ***1***

Q4a) Candidates who were able to describe the production of courgettes were awarded full marks. Suitable answers included:

i) **Named Cultivar** e.g. Courgette 'Defender', 'Venus' or 'Sunstripe'.

ii) **Sowing** is carried out in late spring in a protected environment i.e. greenhouse. One or two seeds are sown in pots or modules to a depth of 2-2.5cm. The weaker seedling is discarded. Seeds can also be sown outdoors in early summer after any risk of frost has passed. Seeds are station sown, two seeds per station (the weaker seedling discarded) 90cm apart in all directions and 2-2.5cm deep.

iii) **Harvesting** starts approximately eight weeks after sowing. The courgettes should feel firm to the touch and be 10-15cm long. They should be cut cleanly from the plant using a sharp knife. Harvest the courgettes regularly to ensure continuous cropping.

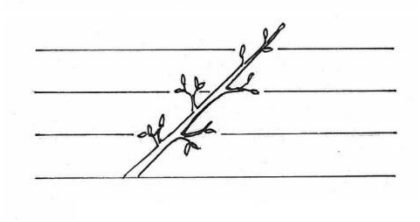
Q4b) Most candidates named slugs as a pest of courgettes and gained maximum marks. Other acceptable answers included; red spider mite and mice.

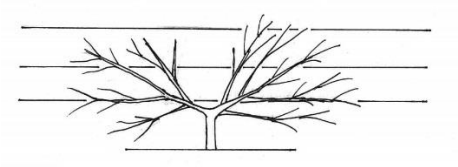
Q4c) Slugs eat the young foliage of courgettes, back to the stem and make holes in the young fruits. Foliage affected by red spider mite becomes rusted and mice gnaw holes in the courgettes at any stage of their development.

MARKS

Q5 *a) For **EACH** of the top fruit diagrams shown below, name:*

i)	*the training system;*	***2***
ii)	*an appropriate fruit;*	***2***
iii)	*a suitable rootstock.*	***2***





b) Describe how weed control can affect quality and yield of a top fruit crop. ***4***

Q5a) Candidates who had a good knowledge of top fruit were awarded full marks for correctly stating the training systems and rootstocks for specific fruits. Suitable answers included:

i) **Cordon**
ii) Apple, Pear, Plum, Gage, Damson
iii) Apples – M9 or M26, Pears – Quince A or Quince C, Plum/Gage/Damson - Pixy

i) **Fan**
ii) Cherry, Plum, Gage, Damson
iii) Cherry – Colt, Plum/Gage/Damson - Pixy or St Julian A

Q5b) The best candidates described a range of factors how weed control affects the quality and yield of a top fruit crop and gained full marks. Weeds compete for nutrition and water which results in smaller fruits and lower yields. Nitrogen and potassium deficiency can also occur. Competition for water may result in fruit split in apples and cherries and may contribute to bitter pit in apples.

Weeds can harbour pests and diseases e.g. Spotted Red Spider Mite which is found in the dry conditions of wall-trained top fruit. Long grass beneath trees can create a damp microclimate which promotes scab and powdery mildew. Both of these will affect the quality and yield of top fruit.

MARKS

Q6 *Describe the production of a crop of summer fruiting (early/mid-season) raspberries under **EACH** of the following headings:*

i)	*cultivar selection;*	***3***
ii)	*planting;*	***4***
iii)	*pruning.*	***3***

Q6) Many candidates were able to describe the production of a crop of summer fruiting raspberries and were awarded full marks. Suitable answers included:

i) **Cultivar Selection** – e.g. Raspberry 'Glen Moy' or 'Glen Ample' should be purchased as DEFRA certified stock which is true to type, virus free and sourced from a reliable grower. Ideally the cultivar selected should have a good flavour and produce a heavy yield.

ii) **Planting** – Dormant raspberry canes are planted in autumn/early winter in a humus rich, moisture retentive soil with a pH of 6.0 – 6.5. The canes are planted 38-48cm apart in rows 1.5 – 2m apart to a depth of 5-8cm with the roots spread evenly and gently firmed in. The canes are pruned to 25cm from ground level and mulched.

iii) **Pruning** – Summer fruiting raspberries are pruned by cutting the old canes, which have just fruited to ground level, leaving the new canes to fruit the following year. Weak, diseased or damaged canes should also be removed. The new canes are tied into the support system evenly spaced at 8-10cm. The tips of the canes are pruned above the top wire.

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