

# **Environmental and Land Based Science**

General Certificate of Secondary Education

Unit **B491/01** Plant Cultivation (Foundation Tier)

## **Mark Scheme for June 2011**

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All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the Report on the Examination.

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Any enquiries about publications should be addressed to:

OCR Publications  
PO Box 5050  
Annesley  
NOTTINGHAM  
NG15 0DL

Telephone: 0870 770 6622  
Facsimile: 01223 552610  
Email: [publications@ocr.org.uk](mailto:publications@ocr.org.uk)

**Annotations**

Used in the detailed Mark Scheme:

<b>Annotation</b>	<b>Meaning</b>
/	alternative and acceptable answers for the same marking point
(1)	separates marking points
<b>not/reject</b>	answers which are not worthy of credit
<b>ignore</b>	statements which are irrelevant - applies to neutral answers
<b>allow/accept</b>	answers that can be accepted
(words)	words which are not essential to gain credit
words	underlined words must be present in answer to score a mark
ecf	error carried forward
AW/owtte	alternative wording
ORA	or reverse argument

Question		CBT Question Numbers	Answer	Mark	Guidance
1		1	Spade – double digging Hoe – removing small, annual weeds Fork – Digging up potatoes	2	3 correct = 2 marks 1 correct = 1 mark
2		2	C - Bulb ; A – rhizome; B – Runner;	2	3 correct = 2 marks 1 correct = 1 mark
3		3	The anther of one flower to the stigma of another flower of the same species	1	
4		4	moving compost – use a wheelbarrow spraying pesticide – wear goggles and a mask carrying a fork – point it downwards working in a glasshouse – remove trip hazards	3	4 correct = 3 marks 3 or 2 correct = 2 marks 1 correct = 1 marks
5	a	5	A in bottom box to label anthers;	1	
	b	6	wind is unreliable/ pollen less likely to land on another flower; increases the chance of pollination/much pollen gets lost	1	
6	a	7	dominant	1	
	b	8	punnett square shown/ results of the cross/ the offspring/outcome of breeding; round seeds/ green stem/ pink flower;	2	An example must be given for 2 marks. <b>reject</b> first generation if not qualified <b>accept</b> first filial generation
7	a	9	14	1	<b>accept</b> 14.3
	b	9	Tannin/Tea reduces/stops/causes less germination (of clover seeds).	1	<b>allow</b> Error carried forward from part a) <b>accept</b> converse <b>accept</b> growth in place of germination

8			10	The pollen would not be able to land here/pollen less likely to germinate/ no pollination; Egg/ovule will not be fertilised/no seeds formed/ no fertilisation; reduced reproduction	2	<b>accept</b> reference to disease if qualified
9	a		11	<b>A</b> ; No fertiliser was added;	2	<b>accept</b> B as a control for D if justified.
	b		12	N/nitrate	1	<b>accept</b> nitrogen
	c		13	first graph	1	
10	a		14	To produce a good tilth/seed bed; To break up large clumps of soil/loosen soil/level soil	1	<b>reject</b> remove weeds
	b		15	rake	1	
11	a		16	natural/not man made/contains humus/animal matter/plant matter/dead matter	1	<b>reject</b> does not contain any chemicals <b>accept</b> carbon based
	b		17	two from: adds humus to the soil; improves crumb structure; slow release; contains a full range of trace elements; increases bacterial action; improves the water holding capacity of the soil; improves aeration	2	<b>ignore</b> produces organic crops/crops are better for you <b>reject</b> does not harm the environment
	c		18	it is warmer indoors/ to give them a head start/ earlier harvest/ avoids frost/ the ground is not ready	1	<b>accept</b> can control conditions <b>reject</b> grow quicker <b>accept</b> stops animals eating the seeds
12			19	any three from: to stop disease organisms/rotting/bacteria; to stop germination; respiration; to prevent pests/rats/mice getting in.	3	
13			20	correct reference to three from: light; warmth; carbon dioxide/oxygen; lack of pests; lack of disease organisms;	3	<b>ignore</b> air

14		21	hydroponics; no soil/roots in a nutrient reservoir; drip irrigation; hosepipe with holes in delivering drips of water and nutrients directly to the roots; boom sprayer ;liquid fertilizer sprayed from the back of a tractor; liquifeeder; fertilizer bottle attached to hosepipe; slurry; using a muck spreader on a tractor; capillary matting with water and fertiliser in the reservoir	3	two marks for two reasonable suggestion. third mark for further details on one of the method.
			<b>Total</b>	<b>36</b>	

**OCR (Oxford Cambridge and RSA Examinations)**  
**1 Hills Road**  
**Cambridge**  
**CB1 2EU**

**OCR Customer Contact Centre**

**14 – 19 Qualifications (General)**

Telephone: 01223 553998

Facsimile: 01223 552627

Email: [general.qualifications@ocr.org.uk](mailto:general.qualifications@ocr.org.uk)

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**OCR (Oxford Cambridge and RSA Examinations)**  
Head office  
Telephone: 01223 552552  
Facsimile: 01223 552553