

# **Environmental and Land Based Science**

General Certificate of Secondary Education **B491/01**

## **Mark Scheme for June 2010**

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This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by Examiners. It does not indicate the details of the discussions which took place at an Examiners' meeting before marking commenced.

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)

Question	Expected Answers	Marks	Additional Guidance
1	E oxygen; F water	2	
2	B 14	1	
3	runner – strawberry bulb – onion rhizome – couch grass	2	1 mark for 1 correct answer; 2 marks for all 3 correct
4	hoe / spade; hoe; garden fork	3	
5	D Pests	1	
6	C improve the crumb structure of the soil	1	

Question	Expected Answers	Marks	Additional Guidance	
7	three correct conditions with no qualification = 1 mark any three from: humidity – too low they dry out / too high they rot; temperature – too high they can suffer disease / too low they could freeze / rot / cool to slow down microbial action; pests – (sealed containers) to prevent pests entering; low oxygen / high carbon dioxide – less respiration; dark – to prevent them sprouting removal of rotten carrots – to stop disease from spreading OWTTE clean container / sterilise carrots – to prevent disease	3	Reject goes off  Accept right temp / humidity  Accept any reasonable suggestion for how to stop pests entering  Reject controlled atmosphere without qualification	
8	wind pollination; more likely that pollen transfers from one plant to the next / plants are closer together so are easier to pollinate OWTTE	2	Accept blown Accept reference to the direction of the wind Reject any reference to seeds Reject if any reference to insects	
9	a	any two from: level the soil; remove stones or large lumps / break up the soil / remove weeds that have already been dug up; produce a good tilth / seed bed.	2	

Question	Expected Answers	Marks	Additional Guidance
b	any two from: tripping over tools; tripping over edging; knocking each other over / working too closely together OWTTE; tools lying around; lack of PPE; canes sticking out of ground; bending back not knees	2	Reject reference to use of incorrect use of tools Reject reference to students standing around and not doing anything
10	March / June	1	Ignore reference to timing in June
11	San Marzano Lungo	1	
12	gardeners delight; three from: small, high yielding, cheap and grow on patio	2	
13	fewer weeds (so less competition) greater number of carrots planted	2	Accept amount
14	one mark for two correct answers and two marks for all three: N / nitrogen/nitrate; P / phosphate; K / potassium / potash	2	Ignore spelling

Question		Expected Answers	Marks	Additional Guidance
15	a	any two from: insect: nectaries; bright coloured / scented flowers; large / sticky pollen; anther / stigma in the correct position for the insect to collect / deposit pollen wind: feathery stigmas; stigmas hanging outside flower; anthers hanging outside flower; small / light pollen	4	Reject any reference to seeds Ignore sticky stigma
15	b	any two reasonable suggestions: species / type of plants; number / quantity of individuals; germination / date; planting date; harvest date; pest / disease; yield / size / how much grown / how fast grown grown from seeds / cuttings / F1 / F2	2	Reject any reference to growing conditions  Reject healthy
16		any three from: thick / strong stem / not leggy / not etiolated; green leaves / not pale green / yellow leaves; turgid (leaves) / not wilted / not droopy / withered well developed / strong roots; no fungi / no mould / no discoloured areas; plenty of fruits / flowers; no pest damage / disease	3	Reject reference to shape  Reject colour of plant  Reject flower colour
<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

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