

Environmental and Land-based Science

GCSE J650

Mark Schemes for the Units

June 2007

J650/MS/R/07

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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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Mark Scheme B493/01
June 2007

Unit B493/1: Management of the Natural Environment (Foundation Tier)

The majority of candidates took this test on screen; smaller numbers, including those with specific needs, were provided with the test on paper. The question numbers in this mark scheme refer to the on-screen test; questions were in the same order, but numbered differently in the paper version.

Question		Mark	Rationale
1	earthworm, woodlouse and slug	1	
2	D	1	
3	B A	2	
4	A	1	
5	B	1	
6	A B	2	
7	A	1	
8	B	1	
9	quicker/do more work/more cost effective/can work steeper land/allows work earlier or later in season/less crop damage as fewer passes/fields bigger (max 2)	2	Cheaper/easier if qualified Reject 'correctly' Reject 'do more'
10	soil compaction/poor drainage/soil pan/poor aeration/erosion (qualified) (max 2)	2	Reject 'flattens'
11	cannot see over box/where going/likely to trip over wtte	1	
	on a trolley/using 2 people or wtte	1	
12	not bending knees/back not straight.	1	
13	more taken in/goes on/less run off/specificity of herbicide to broadleaved plants	1	Reject ref to roots
14	heaters – extend growing season/increase growth/speed up enzymes sprinklers/drip system/capillary matting - provide humidity/prevent drying out/provide water shades - to control light and heat/control day length lights – to extend growing season/for photosynthesis/control day length computer/environmental sensors – set to provide/monitor (ideal) conditions (max 2)	2	
15	(incoming) tide/slippery surface/uneven ground/sunburn/cold/biohazards/broken glass/dehydration (max 2)	2	Reject 'wedged'. Accept jelly fish / crabs
16	+19 (%)	1	Must have + sign
17	idea of improvement ie longer/heavier/thicker/bigger leek	1	Reject 'better'. Ignore numerical answers
18	environmental conditions (or examples)/field conditions (or examples: soil, nutrients)/ref. to sample size/ref. to planting depth/spacing/pests/level of watering/leek	2	Reject 'same size' unless qualified

	variety/equal amount of Rootmore/idea of same growing period (any 2)		
19	fungus is a natural treatment/not synthetic/artificial	1	
20	C	1	
21	growing (large) areas of the same crop; year after year; in the same place; (any 2)	2	
22	advantages: less energy loss/easier to observe/rapidly aware of disease/better growth/easier to handle/takes up less space/land/safe from predators (max 2) disadvantages: disease can spread/labour intensive/high costs/not natural (qualified – not normal behaviour)/more stress/problem of disposal of waste/pollution by noise/small (max 2)	3	Reject 'protected' 'controlled'. Reject 'easier to feed' Accept control of disease if qualified Reject contra arguments Reject taste
23	genes/DNA transferred from other organisms/better production/shelf life/yield/less use of pesticides/better disease resistance (max 2)	2	
	over use of herbicides/genes pass to other organisms/more likely to invade other habitats/toxic to insects/less biodiversity	1	
	TOTAL	36	

Mark Scheme B493/02
June 2007

Unit B493/2: Management of the Natural Environment (Higher Tier)

The majority of candidates took this test on screen; smaller numbers, including those with specific needs, were provided with the test on paper. The question numbers in this mark scheme refer to the on-screen test; questions were in the same order, but numbered differently in the paper version.

Question		Mark	Rationale
1	A	1	
2	B	1	
3	D	1	
4	A	1	
5	A	1	
6	blue-green	1	
7	top left	1	
8	A	1	
9	B	1	
10	soil compaction/poor drainage/soil pan/poor aeration/erosion (qualified) (max 2)	2	Reject 'flattens'
11	larger surface area/pressure reduced/spreads the force/weight	1	Accept ref. to shallow tread not churning up soil
12	large spray area means fewer passes over field	1	
13	incoming tide/slippery surface/uneven ground/sunburn/cold/biohazards/broken glass/dehydration tide - check with locals/get tide tables/have person above high water mark/work when tide is out/do not work alone; surface - do not run/suitable foot-ware qualified/do not carry too much/do not carry sharp equipment unprotected; environment - suitable clothing qualified/regulated period of working/sun screen/water to drink; (hazards, max 2, with correct measures, max 2)	4	Allow ecf from hazard to control measure if this is appropriate for the environment Qualifications must relate clearly to the hazard
14	saves energy/recycles energy (1) relating to less waste of Earth's resources/less pollution (1)	2	
15	more land for other activities - houses – parks/visual impact of tunnels/energy saving by not flying in exotic crops/less danger from pesticides/herbicides (max 2)	2	
16	fungus is a natural treatment/not synthetic/artificial	1	
17	C	1	
18	very subjective/quick/requires experience or training/no measuring equipment needed/easily done in the field/extremes not used so drift to mean/less accurate/reliable; (max 2)	2	
19	environmental conditions (or examples) / field conditions (or examples: soil, nutrients)	2	Reject 'same size' unless qualified

	/ ref. to sample size/ref. to planting depth/spacing/pests/level of watering/leek variety/equal amount of Rootmore/idea of same growing period (max 2)		
20	genes/DNA transferred from other organisms/better production/shelf life/yield/less use of pesticides/better disease resistance (max 2)	2	
	over use of herbicides/genes pass to other organisms/more likely to invade other habitats/toxic to insects/less biodiversity (max 2)	1	
21	burn roots/upset pH/upset base exchange/(might leach and) cause eutrophication/effects on wild flowers/promote weed growth/contamination of water supply (3 points or one explained in detail)	3	
22	a specific example of relevant scientific knowledge; how this can be used to give optimum conditions for growth/production; explain how these conditions improve yield;	3	
	TOTAL	36	

**General Certificate of Secondary Education
Environmental and Land-based Science (Specification Code J650)
June 2007 Assessment Series**

Unit Threshold Marks

		<i>Unit</i>	Maximum Mark	a*	a	b	c	d	e	f	g	u
B493 01	Raw		36				24	20	16	13	10	0
	UMS		50				30	25	20	15	10	0
B493 02	Raw		36	27	23	19	15	11	9			0
	UMS		50	45	40	35	30	25	23			0

For a description of how UMS marks are calculated see;
http://www.ocr.org.uk/exam_system/understand_ums.html

Statistics are correct at the time of publication

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