

# **Environmental and Land-based Science**

General Certificate of Secondary Education **GCSE J650**

## **Mark Schemes for the Units**

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**January 2010**

**J650/MS/R/10J**

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## B491/01 Plant Cultivation

Ques		Expected Answer	Marks	Additional Guidance
1		adding FYM – fork producing a good tilth – rake	2	
2		2 marks for all six adaptations correct 1 mark for four or five adaptations correct wind: <b>B, C, D</b> insect: <b>A, E, F</b>	2	
3		<b>D</b> it is free from weeds	1	
4		<b>C</b> red	1	
5		<b>B</b> they will produce the same coloured flowers as the original bulb	2	
6		2 marks for all four in the correct order 1 mark for two or three correct <b>C A D B</b>	2	
7		<b>D</b> they are more efficient	1	
8		do not run / point it downwards / use a wheelbarrow; wash hands after use / wear overalls / wellies; do not run / misbehave / do not touch;  broken glass / ensure adequate ventilation / not too hot;	3	REJECT wear steel toe caps  REJECT wear goggles  REJECT make sure there is no glass around / tidy
9	a	pH; nutrient level; oxygen concentration;	2	REJECT water / light / humidity

Ques		Expected Answer	Marks	Additional Guidance
9	b	K / potassium; needed to produce fruits / tomatoes	2	do not double penalise – award a mark for fruit even if K is incorrect and vice versa
	c	uptake of water / nutrients	1	REJECT for anchorage
10	a	76%	1	
	b	<i>advantage</i> quick / easy / does not require specialist equipment / crop not harmed <i>disadvantage</i> subjective / human error;	2	REJECT not accurate
11		strawberry	1	
12	a	copper	1	
	b	two from: copper / iron / zinc	1	
	c	25%	1	
13		organic are natural / not man-made; organic do not contain known quantities of NPK / nutrient; organic improve soil structure / retain water organic are cheap / readily available; organic are harder to apply / bulky ACCEPT converse answers	3	REJECT contain no chemicals
14		sepal; ovary	2	

Ques		Expected Answer	Marks	Additional Guidance
15		watered; spray with insecticide / check for pests and diseases; remove ripe / damaged / diseased tomatoes side shooting OWTTE; add fertiliser / feed;	3	REJECT stake  ACCEPT tie up
16		<b>tube B</b> seeds did not germinate because they need water / too dry; <b>tube C</b> seeds did not germinate because they need oxygen / air; <b>tube D</b> seeds did not germinate because they were too cold; <b>tube A</b> seeds did germinate because they had water, oxygen and warmth  reference to growth / germination must be made at least once to obtain maximum marks	3	REJECT if just repeats the stem
<b>Total</b>			<b>36</b>	

## B491/02 Plant Cultivation

Ques		Expected Answer	Marks	Additional Guidance
1		C red	1	
2		B they will produce the same coloured flowers as the original bulb	1	
3		2 marks for all four in the correct order. 1 mark for two or three correct. <b>C A D B</b>	2	
4		red flower	1	
5		style; ovary	2	
6	a	D oxygen	1	
	b	B damaged plumule	1	
7		humid atmosphere; transpiration is reduced; compost does not become waterlogged; warmer conditions / right temperature	2	REJECT any reference to roots ACCEPT stops them drying out / kept moist
8	a	pH; nutrient level; oxygen concentration	1	REJECT water
	b	K / potassium; needed to produce fruits / tomatoes	2	

Ques		Expected Answer	Marks	Additional Guidance
8	c	less labour intensive; conditions kept more constant / more accurate / no human error; less resources wasted; higher yield / quality of crop;	2	REJECT cheaper unless qualified ACCEPT rapid response to change conditions
9	a	76%	1	
	b	<i>advantage:</i> quick / easy / does not require specialist equipment / crop not harmed <i>disadvantage:</i> subjective / human error	2	REJECT not accurate
10	a	<i>advantage:</i> does not require pollinators; maintains a successful genotype  <i>disadvantage:</i> reduces plant vigour; less variation; inbreeding	2	REJECT produces more peas
10	b	1 from remove the anther / cover the anthers; cover the stigmas	1	REJECT take away the pollen / remove sex organs ACCEPT remove the stigmas
11	a	more nutrients lost when tops are used as animal feed; tops are decomposed to release nutrients when ploughed in	2	
	b	1:2.5 / 2:5	1	REJECT 90:225
	c	<b>B</b> 36:12:45	1	



Ques		Expected Answer	Marks	Additional Guidance
12		1 mark each for the disease name, symptoms and type of microorganism eg. damping off disease; the base of seedlings rot / so that they fall over; caused by fungi / species named	3	REJECT reference to pests
13		cool reduces enzyme activity / too cold causes freeze damage; dry reduces fungal diseases / too dry causes fruit to dry out high carbon dioxide / low oxygen / high nitrogen prevents respiration removal of ethylene / ethene to prevent ripening	3	ACCEPT use of 1-methylcyclopropene or catalytic combustion for ethylene removal
14		runner; new plant / plantlet roots / placed in compost; runner breaks off / runner dies / cut off	3	ACCEPT stolon
<b>Total</b>			<b>36</b>	

**B492/01 Amenity horticulture**

Ques		Expected Answer	Marks	Additional Guidance
1		B pricking out	1	
2		fertiliser, heat, water	3	
3		D	1	
4		are denser, adding more mass to the pot	1	
5		contain pests and disease organisms	1	
6	a	start of flowering	1	ALLOW May , June or July
	b	stop flowering ALLOW responses Sept, Oct or Nov	1	
7		D it prevents the user from receiving a lethal shock	1	
8		any three from: protection from frosts / keeps plants warmer control of growing conditions; better quality plants; earlier production / extension to the growing season	3	ACCEPT biological control
9		2 from wood more likely to rot / metal has longer life metal frame allows greater light transmission OWTTE metal frame is stronger	2	REJECT better, cheaper ACCEPT references to appearance

Ques		Expected Answer	Marks	Additional Guidance
10		environmental condition (1 mark): (relative) humidity; temperature (ACCEPT heat); CO <sub>2</sub> ; light ; (ACCEPT water) 1 mark for use of information: data sent to a computer / activates the relevant environmental control agent	2	
11	a	criteria for suitable answers: summer flowering (or colour), non permanent planting and short growing  typical responses likely to include: geranium (Pelargonium); French marigold; lobelia; alyssum; salvia; petunia; busy lizzie (Impatiens); begonia; ageratum	3	this free response question could yield a large range of answers  common names are acceptable to gain mark
12		put up posters or pictures of the trees in the garden centre staff to recommend the trees when they speak to customers	2	ACCEPT use of CCTV; use of video.
13	a	show lawn	1	
	b	creeping red fescue	1	
	c	shade tolerant / low light levels	1	ACCEPT more tolerant of drought
	d	<b>D</b> dwarf ryegrass	1	
	e	family lawn	1	
	f	yes, because it is a mixture very similar to easy care lawn	1	No mark given for simply saying "yes"
14		watering; feeding; check for / control pests and diseases; weed control; pruning (all qualified) eg. watering with method / time / amount	3	ACCEPT check the support

Ques		Expected Answer	Marks	Additional Guidance
15		divide storage organ (rhizome, corm bulb) OR take a shoot from plant; plus any one from: choose healthy material, true to type; remove dead / damaged material; pot into suitable compost; water and label	2	
16		any three from: improved flower colour; longer flowering time; disease resistance; earlier / later flowering; scent.; reduced numbers of thorns	3	ACCEPT hardiness / appearance
<b>Total</b>			<b>36</b>	

## B492/02 Amenity horticulture

Ques	Expected Answer	Marks	Additional Guidance
1	<b>B</b> are denser, adding more mass to the pot	1	
2	it prevents the user from receiving a lethal shock	1	
3	<b>A</b> cylinder	1	
4	any 3 from eg. London Plane; Silver Birch; (small leafed) lime, (fastigiage) hornbeam, ginkgo	3	other examples may be permitted if they meet the criteria set REJECT trees that are prickly, overlarge, poisonous, wide spreading, slow growing, unsightly NB certain trees which were planted many years ago, are now not classed as suitable – eg Horse Chestnut
5	hose: use hose reel infection – high action: warning signs – do not drink / disconnect hose when not in use sap low	4	ACCEPT put away possible action response could be wide
6	<b>D</b> Plants raised will be variable in growth habit	1	
7	hardiness evergreen foliage trailing habit	3	

Ques		Expected Answer	Marks	Additional Guidance
8		any 2 from wood more likely to rot / metal has longer life metal frame allows greater light transmission (OWTTE) metal frame is stronger	2	REJECT better, cheaper ACCEPT references to appearance ACCEPT wood is expensive to maintain
9		environmental condition (1 mark): (relative) humidity; temperature; CO <sub>2</sub> ; light (ACCEPT water) 1 mark for use of information : data sent to a computer / activates the relevant environmental control agent	2	environmental control agent likely to be items such as ventilation (from vents or fans) response must relate to the environmental condition stated in answer
10		<i>advantage:</i> protected structure will limit exposure to pests or diseases; enclosed environment may facilitate predator management <i>disadvantage:</i> lack of airflow / high humidity inside structure may encourage fungal diseases;	2	ACCEPT beneficial organisms excluded from crop
11		any 2 from seed mixture can be produced to the purchasers own specification; if weather conditions are not suitable seed may be stored, unlike turf which will deteriorate; seed is easier to transport and handle	2	
12	a	shade tolerant / low light levels	1	ACCEPT more tolerant of drought
	b	<b>D</b> dwarf ryegrass	1	
	c	yes, because it is a mixture very similar to easy care lawn	1	no mark given for simply saying yes

Ques		Expected Answer	Marks	Additional Guidance
13	a	1 mark from each 'zone' B cold weather; soil prevents seed from germinating A hot summer weather; potential drought slows sales	2	for July- Aug, ACCEPT a holiday time
	b	40%	1	
14		any 3 from wide potential coverage; higher profit margins as selling direct to the consumer; stock may be held in optimum conditions until despatch; potential to target specific sub-groups or niches who may be interested	3	REJECT "cheaper " without clarification
15		any 3 from hardiness; robust; shade tolerance (large tree); size/ rate of growth; moisture levels in the soil; pest or disease resistance;. (OWTTE)	3	a wide range of responses are predicted- qualified answers should be considered and generalistic terms rejected ACCEPT within client's budget; aesthetic considerations NB responses must describe attributes in addition to those stated in the question.
16		divide storage organ (rhizome, corm bulb) OR take a shoot from plant; plus any one from: choose healthy material, true to type; remove dead/damaged material; pot into suitable compost; water and label	2	
<b>Total</b>			<b>36</b>	

## B493/01 Management of the Natural Environment

Ques		Expected Answer	Marks	Additional Guidance
1		<b>B</b> habitat	<b>1</b>	
2		<b>D</b> food web	<b>1</b>	
3		<b>C</b> monoculture	<b>1</b>	
4		<b>C</b> pH	<b>1</b>	
5		<b>B</b> genetic modification	<b>1</b>	
6		legume crop	<b>1</b>	
7	<b>a</b>	water	<b>1</b>	
	<b>b</b>	smell	<b>1</b>	
8		<b>drainage</b> poor    good; <b>water holding</b> good    poor;	<b>2</b>	
9		instructions- carry and use equipment safely; - behave sensibly; explanation- to prevent accidents to oneself or others; ora	<b>3</b>	



Ques		Expected Answer	Marks	Additional Guidance
10		heating house; cooking breakfast; listening to radio / television; travel to school in car / bus / train; use computer to sit exam; artificial light; etc	3	
11		1 - 6 pollution from road; competition with established verge plants; 7- 9 open ground good light; rich meadow soil, less competition with grass; ora	2	
12		flat muscular foot for moving: slime on foot to reduce friction; eyes / antennae to sense the food; rasping tongue to eat vegetation; air hole and 'lung' to breathe air; any one	1	
13		fewer soil spaces / less air / waterlogged; soil remains unmixed / less fine top soil; soil surface contains more raw humus / leaf litter; soil contains less humus; soil structure poorer – less worms / casts; ora any two	2	

Ques		Expected Answer	Marks	Additional Guidance
14		kill / burn soil animals / insects; sterilise soil / kill micro organisms; set fire to organic material;	1	REJECT it would catch fire
15	a	i	1	
		ii	1	
		iii	1	
	b	house sparrow	1	
	c	house sparrow greenfinch chaffinch barcharts	2	2 correct for 1 mark, all 3 for 2 marks
16		fence in / limit access: graze; with sheep; ora any 2	2	ALLOW re-chalking reference eg cleaning image outline
17		housing details - building / pens, cages / environment control / lighting, heating; stocking details - space per animal / numbers housed; management details - food / feeding times / daily inspection re disease;	3	
18		falling rock / uneven ground / slippery ground / land slides; etc any 3 for 1 mark signs about dangers in car parks / leaflets in tourist centres / danger signs on styles / local radio;	3	
<b>Total</b>			<b>36</b>	

## B493/02 Management of the Natural Environment

Ques		Expected Answer	Marks	Additional Guidance
1		<p><b>drainage</b>      poor      good;</p> <p><b>water holding</b>      good      poor;</p>	2	
2		D wind farm turbines	1	
3	a	B	1	
	b	between death and ammonium compounds	1	
4		D 5	1	
5		A conservation	1	
6		tyre on far left	1	
7	a	D organic particles	1	
	b	<p>measure fine sand compare to 1 mm scale</p> <p><b>or</b></p> <p>measure mm line compare to sand particle</p>	1	<p>sand is 1.4 cm, line is 6.8cm, a fifth</p> <p>five into 1mm = 0.2mm</p> <p><b>or</b> <math>6.8 / 10 \times 2 = 1.36</math> for sand diameter</p>
	c	<p>H<sup>+</sup> ions would be in clay suspension / fewer on clay</p> <p>Ca<sup>++</sup> would be absent;</p>	1	ALLOW idea of flocculation.
8		<p>any one from</p> <p>flat muscular foot for moving; slime on foot to reduce friction; eyes / antennae to sense the food; rasping tongue to eat vegetation; air hole and 'lung' to breathe air;</p>	1	

Ques		Expected Answer	Marks	Additional Guidance
9		any two from fewer soil spaces / less air / waterlogged; soil remains unmixed / less fine top soil; soil surface contains more raw humus / leaf litter; soil contains less humus; soil structure poorer – less worms / casts	2	REJECT answers that do not deal with structure
10		kill / burn soil animals / insects; sterilise soil / kill micro organisms; set fire to organic material;	1	
11	a	any two from be specific / non persistent in soil / not affect animal that eat plant / degrade when plant dies and rots ;	2	ACCEPT not poisonous to animals / biodegradable only one mark for killing living things (plants and animals)
	b	lice may eat other beneficial plants / bring in disease / spread elsewhere when no knotweed to eat / upset ecosystem-detail needed	1	REJECT harm the ecosystem
12		any two from spider uses energy / loses heat when moving / growing / reproducing; spider not eaten / not all spider is eaten / digested by blue tit; lost in the faeces;	2	ACCEPT flies may be eaten by centipede

Ques		Expected Answer	Marks	Additional Guidance
13		eg named amphibian (newt) - needs water for reproduction; named aquatic mammal (otter) - relies on water for food; named insect (dragonfly) - part of life cycle in water; named plant - (water cress - needs flowing clear water; named crustacean (FW crayfish) - competition from American species.	2	
14	a	house sparrow greenfinch chaffinch barcharts	2	2 correct for 1 mark, all 3 for 2 marks
	b	house sparrow 6.25 starling 6.00 woodpigeon 4.72 blue tit 4.40 blackbird 4 23	2	1 mark for correct maths; 1 mark for order; ecf
15		solar; (1 mark) idea of biggest increase in overall share / ref to very small amount starting point in 2009; (1 mark)	2	details <b>solar</b> - 5% in 2009 and 14% in 2019 of total GW so 180 % increase; <b>wind</b> - 35 % in 2009 and 64% in 2019 of total GW so 83% increase / <b>biomass</b> -20% in 2009 and 9% in 2009 of total GW so 55% decrease / <b>small hydro</b> does not change in amount but is less % of a increased GW;

Ques		Expected Answer	Marks	Additional Guidance
16		falling rock / uneven ground / slippery ground / land slides; etc any 3 for 1 mark signs about dangers in car parks / leaflets in tourist centres / danger signs on styles / local radio;	3	
17		nitrates in run off promotes algal, plant growth; on their death decay carried out by oxygen demanding bacteria; lack of oxygen in water kills animals; animal decay accelerates BOD	3	any 3 with detail ALLOW ref. to blue-baby syndrome
18		temperature / humidity sensor in nest; radio transmits to lab computer; data recorded and stored for replication;	2	1 mark for what to use 1 mark for why
<b>Total</b>			<b>36</b>	

**B494/01 Care of Animals**

Ques		Expected Answer	Marks	Additional Guidance
1		so it does not get hurt;	1	
2		parasite;	1	
3		hamster; rat;	2	
4		to grind food;	1	
5		clockwise from top right – fallopian tube; ovary; vagina; womb;	3	4 correct = 3 marks, 3 correct = 2 marks; 2 correct = 1 mark
6		repair;	1	
7		tetanus;	1	
8		pets / research / showing;	1	ACCEPT food for snakes etc
9	a	5%;	1	
	b	200	1	
	c	29%	1	
10		Siamese – very active, noisy if left, bad tempered; Persian – large size, long fur, grumpy;	2	any 2
11		can get contaminated / dirty / by bedding / substrate / waste / faeces;	1	REJECT can be turned over ACCEPT can be gnawed
12		any suitable reference to conformation / marking;	1	REJECT healthy / well behaved for dog ACCEPT obedience

Ques		Expected Answer	Marks	Additional Guidance
13		any 3 from: there will be a range of acceptable responses e.g. check anus is clean; check eyes are clear; check ears are clear; check skin / feet for cuts / grazes; comb for parasites; check teeth / mouth; check body for lumps;	3	
14		so you do not pass on germs / disease / infection <u>to the animal</u> ;	1	
15	a	any 2 from: size; security; exercise; entertainment; ventilation; nesting / bedding area; ora	1	
	b	food container ;water bottle / nipple drinker;	1	
16		succulent contains more - water concentrate dry; succulent usually natural -concentrate made by humans; succulent low in nutrient content concentrates higher;	1	
17		wash hands;  any 2 from: put guinea pigs into holding cage / outside run; clean fittings / named fittings; throw away bedding / substrate / food / water; replace bedding / substrate / food / water;	1  2	max 2 overall if no reference to washing hands before or after



Ques		Expected Answer		Marks	Additional Guidance
18		<b>part of the digestive system</b>	<b>function</b>	3	6/7 correct = 3 4/5 correct = 2 2/3 correct = 1
		anus	ejects undigested food from the body		
		caecum	contains microorganisms to digest cellulose		
		large intestine	absorbs water		
		mouth	takes food into the body		
		rectum	stores waste food		
		small intestine	absorbs digested food		
		stomach	mechanically churns food		
19		any 2 from: rubbing anus against objects / floor(scooting); constantly hungry; weight loss; unhealthy / dull coat / skin sores and redness; enlarged / swollen abdomen; vomiting / diarrhoea; evidence of worms in faeces;		2	
<b>Total</b>				<b>36</b>	

## B494/02 Care of Animals

Ques		Expected Answer		Marks	Additional Guidance																
1		tetanus;		1																	
2		<table border="1"> <thead> <tr> <th>part of the digestive system</th> <th>function</th> </tr> </thead> <tbody> <tr> <td>anus</td> <td>ejects undigested food from the body</td> </tr> <tr> <td>caecum</td> <td>contains microorganisms to digest cellulose</td> </tr> <tr> <td>large intestine</td> <td>absorbs water</td> </tr> <tr> <td>mouth</td> <td>takes food into the body</td> </tr> <tr> <td>rectum</td> <td>stores waste food</td> </tr> <tr> <td>small intestine</td> <td>absorbs digested food</td> </tr> <tr> <td>stomach</td> <td>mechanically churns food</td> </tr> </tbody> </table>	part of the digestive system	function	anus	ejects undigested food from the body	caecum	contains microorganisms to digest cellulose	large intestine	absorbs water	mouth	takes food into the body	rectum	stores waste food	small intestine	absorbs digested food	stomach	mechanically churns food		3	6/7 correct = 3 4/5 correct = 2 2/3 correct = 1
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small intestine	absorbs digested food																				
stomach	mechanically churns food																				
3		200;		1																	
4	a	exploring;		1																	
	b	grooming;		1																	
5	a	can encourage <u>fungal</u> infection;		1																	
	b	for good shell / bone growth;		1																	
	c	cold <u>blooded</u> ;		1																	
6		<i>stage treated</i> - in the cat / treat cat to kill adult worms / eggs; <i>reason</i> - killing microscopic pond organisms / tadpoles / frogs / fish would harm food chain;		2																	

Ques		Expected Answer	Marks	Additional Guidance
7		succulent contains more - water concentrate dry; succulent usually natural -concentrate made by humans; succulent low in nutrient content concentrates higher;	1	
8		any 2 from: rubbing anus against objects / floor(scooting); constantly hungry; weight loss; unhealthy / dull coat / skin sores and redness; enlarged / swollen abdomen; vomiting / diarrhoea; evidence of worms in faeces;	2	
9		<i>advantage</i> - compact/easy to carry / animal not secure / could escape; <i>disadvantage</i> - owner cannot see what pet is doing	2	answers must relate to the owner not the dog
10		breed the palest available; choose palest offspring; over several generations;	3	
11		wash hands;  any 2 from: put guinea pigs into holding cage / outside run; clean fittings / named fittings; throw away bedding / substrate / food / water; replace bedding / substrate / food / water;	1  2	max 2 overall if no reference to washing hands before or after

Ques	Expected Answer	Marks	Additional Guidance
12	any 3 from: keep disturbance / noise to minimum; isolate; increase amount / quality of food given / description; provide nesting site(s) / boxes / extra bedding; check carefully for young;	3	
13	increase in oestrogen causes female-like behaviour; peak in oestrogen causes ovulation; peak in any 3 from: progesterone / high progesterone, low oestrogen causes male behaviour; Increase in both hormones causes increase in size of follicle / ovary;	3	
14	any 3 from: <i>answers will depend partly on animal chosen, but should include:</i> checking for discharge as this can be sign of infection; checking for parasites as can cause allergies / be transmitted to humans / cause disease; checking for skin lesions as these could become infected; checking mouth / teeth as overgrown / damaged teeth can cause inability to eat;	3	mark awarded for <b>reason</b>
15	any 4 from: enzyme combines with substrate / food; like lock and key / at active site; splits food / named food into smaller molecules; makes food soluble; enzymes can be specific or non specific; examples = max 2 marks	4	
<b>Total</b>		<b>36</b>	

## B495/01 Livestock Husbandry

Ques		Expected Answer	Marks	Additional Guidance
1		<b>C</b> poultry	1	
2		draught free; dry; good ventilation; warm	4	
3		<b>B</b> Animals eat less food <b>G</b> Less energy is used by the animals	2	
4		fallopian tube	1	
5		<b>C</b> black and white	1	
6		<b>B</b> F1 hybrids	1	
7		scratching; weight loss; increased appetite; visual signs; any 3 suitable examples	3	ALLOW scouring
8	a	roughage / bulk feed or example eg hay / straw	1	ALLOW straights eg wheat / barley etc
	b	concentrate or example eg calf pellets	1	REJECT silage

Ques		Expected Answer	Marks	Additional Guidance
9		bulling; attention from the male; standing for the male; swollen vulva; reddening; discharge from vulva	2	ALLOW bawling
10		approach from the front; make sure the animal knows you are there; talk quietly to the animal; make no sudden moves any 3	3	ALLOW wear suitable foot wear, don't work alone
11	a	date of birth; number in litter; number of teats; weight, dam / sire, numbers of litters; herd number ora	3	
	b	easier to sort data; to access individual records; to manipulate; analyse; process; to make backup copies; data can be sent by email ora	1	ALLOW legibility / easier to store REJECT safer / won't get lost

Ques		Expected Answer	Marks	Additional Guidance
12	a	1.6 ml accept 1.61 ml	1	if a incorrect check subsequent calculation for mark
	b	50 ml	1	
13	a	non-infected pigs (Z)	1	
	b	treated infected pigs (Y)	1	
	c	as a control - for purposes of comparison	1	
14		the non infected pigs left untreated	1	
15		yield; disease resistance; hardiness; conformation or examples of max 3	3	
16		dangerous animals; machinery; chemicals; heavy lifting; disease or examples max 3	3	REJECT words without qualification eg animals
<b>Total</b>			<b>36</b>	

## B495/02 Livestock Husbandry

Ques		Expected Answer	Marks	Additional Guidance
1		label on left arrow	1	
2		A Animals can be fed ad lib G High protein content I The feed is palatable	3	
3		B Having a small amount of the antibiotic can produce resistant bacteria	1	
4		C black and white	1	
5		D Testosterone	1	
6	a	scratching; weight loss; increased appetite; visual signs; any 3 suitable examples	3	
	b	drain fields; isolate new stock; keep buildings clean	3	
7	a	the farmer knows when to put the rams in; the farmer knows when lambing will start; all lambing takes place at the same time any 2	2	
	b	ewes carrying 1, 2 or 3 lambs can be separated and fed appropriately; barren ewes can be spotted early for culling	2	ALLOW put to ram again / know stage of pregnancy



Ques		Expected Answer	Marks	Additional Guidance
8	a	roughage / bulk feed or example eg hay straw	1	
	b	concentrate or example of eg calf pellets	1	
9		date of birth; number in litter; number of teats; weight, dam / sire; numbers of litters; herd number; breed; sex; production ration ora	3	
10	a	1.6 ml	1	if part a incorrect check subsequent calculation for mark ACCEPT 1.61 ml
	b	50 ml	1	
11		non-infected pigs	1	ALLOW Z; 2.87
12	a	25%	1	
	b	90%	1	
	c	67,500J	1	

Ques		Expected Answer	Marks	Additional Guidance
13		safer; don't have to feed / care for the bull, prevents in breeding; gives access to best bloodlines; can select for particular characteristics in the offspring	4	ALLOW choose which cows to inseminate; sexed offspring; sperm motility can be checked; more pregnancies per ejaculation. REJECT cheaper without qualification
14	a	check accuracy of the scale; calibrate / zero safety of animal; not stressing the animal; recording the weight and identifying the animal; disinfecting / hygiene	2	any 4 points for 2 marks 2-3 points = 1 mark
	b	any 2 from monitor growth rates: check the animal is market ready; check the animal is healthy	2	
<b>Total</b>			<b>36</b>	

# Grade Thresholds

## General Certificate of Secondary Education Environmental and Land-Based Science (J650)

January 2010 Examination Series

### Component Threshold Marks

Component		Max Mark	A*	A	B	C	D	E	F	G
B491/01	Raw	36				22	18	14	11	8
	UMS	34				30	25	20	15	10
B491/02	Raw	36	30	25	20	15	11	9		
	UMS	50	45	40	35	30	25	20		
B492/01	Raw	36				25	21	18	15	12
	UMS	34				30	25	20	15	10
B492/02	Raw	36	29	25	21	17	13	11		
	UMS	50	45	40	35	30	25	20		
B493/01	Raw	36				24	21	18	16	14
	UMS	34				30	25	20	15	10
B493/02	Raw	36	30	25	20	16	13	11		
	UMS	50	45	40	35	30	25	20		
B494/01	Raw	36				28	24	21	18	15
	UMS	34				30	25	20	15	10
B494/02	Raw	36	30	26	22	19	15	13		
	UMS	50	45	40	35	30	25	20		
B495/01	Raw	36				28	24	21	18	15
	UMS	34				30	25	20	15	10
B495/02	Raw	36	29	26	23	20	15	12		
	UMS	50	45	40	35	30	25	20		

### Overall

	A*	A	B	C	D	E	F	G
UMS	270	240	210	180	150	120	90	60
Cumulative Percentage in Grade	0.0	0.0	0.0	0.0	33.3	66.7	66.7	100

The total entry for the examination was 3

Statistics are correct at the time of publication.

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