OCR
Oxford Cambridge and RSA

GCSE

Environmental and Land Based Science

Unit **B682/02:** Plant Cultivation and Small Animal Care (Higher Tier)

General Certificate of Secondary Education

Mark Scheme for June 2016

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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.

OCR will not enter into any discussion or correspondence in connection with this mark scheme.

Expected Answers			Marks	Additional Guidance
1		Any three from: Biological pest control: does not kill all the pests; takes a long time to start working; is species specific; can't develop resistance; can reproduce does not leave chemical residue on the plant; does not result in pollution/ harm the environment; unwanted ecological impact of the biological pest control; risk of losing biological control agent/ needs to be used in a glasshouse. ORA for non biological	3	**I** cost **I** not as effective
2	a	2.9kg	2	Two marks for the correct answer One mark for correct total 14.5kg or correct workings
2	b	(no) Yield in (Plot 1) inorganic is higher than organic; Inorganic 1.46kg and organic 1.43kg	2	
2	c	See LOR markscheme	6	
3		The level of carbon dioxide rises gently then peaks (at 7-8 days); Due to respiration; Spike in ethylene production at day 7/8; Ethylene stimulates fruit ripening	4	
4		See LOR markscheme	6	
5		Any two from: Long above ground stem/runner/stolon; New plantlet forms at the end; Produces roots into the soil; Receives nutrients from the parent plant; When it is large enough the runner disintegrates.	2	

Expected Answers			Marks	Additional Guidance
6	a	Any three from: Broiler was (slightly)heavier at the start/both chicks were similar masses at the start; Broiler grew/ increased in mass faster Broiler heavier at the end Any comparative data	3	Need a comparative statement eg. 950g compared to 342g
6	b	30/30.06	2	One mark for correct working but in correct answer (902 or 900/30)
6	c	Any two from: Use more chickens Compare using different breeds of layers and broilers Weigh the chickens every day Weigh the chickens for a longer period of time Repeat the investigation	2	**A** relevant comment about gender
6	d	Reduced gene pool; Lack of variation/inability to evolve; Accumulation of harmful recessive alleles; Increased risk of deformity/named deformity;;	3	Max 2 marks for named deformities/ genetic problems
7		See LOR markscheme	6	
8	a	22-23 weeks	1	**A** 24
	b	Any two from: Eggs are laid in spring; Chicks hatch out in spring; When there is plenty of food/ temperature is warm.	2	
	c	Any two from: Oxygen enter/Carbon dioxide removed; (Due to) respiration; releases carbon dioxide to prevent acid build up	2	1 mark for reference to gas exchange/ air enters **and** waste gases removed
9		More time is spent scratching (in second week)/specific activity related to parasites; Fewer activities or named activity	2	

Expected Answers			Marks	Additional Guidance
10		Arguments for (one from): Stops unwanted puppies being born; Reduces aggressive behaviour; Prevents unwanted future diseases/cancers; Arguments against (one from): Removes the dogs natural instinct; Dogs have a right to reproduce; Painful procedure/harmful/stressful	2	One ethical argument for and one ethical argument against **I** cost
		Total	50	

Question	Answer	Marks	Guidance
2c	**[Level 3]** A detailed scientific explanation of how each of the materials improve soil structure and fertility. Quality of written communication does not impede communication of the science at this level. (5-6 marks) **[Level 2]** A scientific explanation of how each of the materials improve soil structure and fertility. Quality of written communication partly impedes communication of the science at this level. (3-4 marks) **[Level 1]** An explanation of how one of the named materials improves soil structure or fertility. Quality of written communication impedes communication of the science at this level. (1-2 marks) **[Level 0]** Insufficient or irrelevant science. Answer not worthy of credit. (0 marks)	6	**This question is targeted at grades up to A*** **Indicative scientific points may include:** Addition of organic matter: • Which improves drainage • Prevents erosion • Release nutrients • Encourages worms/microbial activity Addition of lime: • To flocculate soil particles • To improve drainage • To neutralise soil • To increase the availability of nutrients • Add calcium Addition of coarse sand: • To improve drainage • Ease of cultivation • Prevents waterlogging • Improves root penetration

Question	Answer	Marks	Guidance
4	**[Level 3]** A detailed description of how one pest **and** one disease results in plant ill health **and** an explanation of how these pests and diseases can be controlled. Quality of written communication does not impede communication of the science at this level. (5-6 marks) **[Level 2]** A detailed description of how one pest **and** one disease results in plant ill health OR A detailed description of how one pest results in plant ill health **and** an explanation of how this pest can be controlled. OR A detailed description of how one disease results in plant ill health **and** an explanation of how this disease can be controlled. Quality of written communication partly impedes communication of the science at this level. (3-4 marks) **[Level 1]** A description of how one pest **or** one disease results in plant ill health **or** an explanation of how this pest **or** disease can be controlled. Quality of written communication impedes communication of the science at this level. (1-2 marks) **[Level 0]** Insufficient or irrelevant science. Answer not worthy of credit. (0 marks)	6	**This question is targeted at grades up to A** **Indicative scientific points may include:** **Pests:** • Aphids • Suck sap to reduce vigour • Spread of viruses • Use of chemical pesticide • Use of biological control agent • Slugs • Leaf damage • Use of pesticide/ beer traps/ egg shells **Diseases:** • Damping off • Seedlings rot from the base/white mould seen • Do not overwater seedlings/use fresh compost/ use fungicide • Potato blight • Potatoes rotten when lifted • Rotate potatoes • Use fungicide/do not grow potatoes in soil contaminated with blight

Question	Answer	Marks	Guidance
7	**[Level 3]** A full description of digestion to include all the major organs **and** their function. Quality of written communication does not impede communication of the science at this level. (5-6 marks) **[Level 2]** A description of digestion to include most of the major organs **and** their function. Quality of written communication partly impedes communication of the science at this level. (3-4 marks) **[Level 1]** A description of digestions to include an organ involved **and** its function. Quality of written communication impedes communication of the science at this level. (1-2 marks) **[Level 0]** Insufficient or irrelevant science. Answer not worthy of credit. (0 marks)	6	**This question is targeted at grades up to C** **Indicative scientific points may include:** • Mechanical digestion in the mouth by the teeth • Saliva to moisten or break down the food • Acid in stomach • to kill microbes • Breakdown of food by stomach/small intestines/saliva • By enzymes • Absorption of digested food/named substances • In the small intestine • Bacterial action in caecum to digest cellulose • Production of soft faeces at night and reingestion • Absorption of products of cellulose digestion/to gain more nutrients • Absorption of water in the large intestine

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