(ii) A gardener crosses a plant that has green pods with a plant that has yellow pods. The gardener thinks both these plants have a homozygous genotype.

The result is 15 new plants with green pods and 3 plants with yellow pods.

Show that the gardener's green plant did **not** have a homozygous genotype by completing the two genetic diagrams.

Use letters G and g for the alleles.

If the green plant has a homozygous genotype:

	yello	low pods	
green pods			
If the green plant does not have a	Offspring ratio homozygous genotype:	erale.co.uk	
Preview pods	om Note age 14 of	f 45	
	Offspring ratio .		[3]
The ratio the gardener achieved wa	as 5 green to 1 yellow.		
Suggest why this does not match e	ither of the offspring ra	atios.	
			[1]

(iii)

- Student **Y** used a similar method but left the soil in the oven for a different length of time. Student **Y** found the moisture content of soil sample **C** to be much higher than student **X**. ٠
- •

Explain why student Y found the moisture content of soil sample C to be higher than student X.

	[2]
(iv)	What could both students do to check that the moisture content they measured is accurate?
	[1]
(b)	Moisture content is one factor that affects plants.
	The amount of microorganisms in the soil can also affect plant growth.
	Explain why soil microorganisms are important for plant growth.
	from Note 45
	preview n. 1801
	[3]
(c)	Why are microorganisms described as a biotic factor and soil moisture as an abiotic factor?
	[1]

15

Dodo

18

The dodo lived in the forests on the island of Mauritius.

They evolved from a much smaller pigeon that flew to the island.

Pigeons escape predators by flying away; they nest in trees so predators find it harder to eat their eggs.

There were originally no predators or humans on Mauritius.

Dodos nested on the ground and did not fly.

Humans arrived on the island in 1598. They brought with them animals that spread across the island destroying forests and eating eggs.

The dodo became extinct by 1700.

Pigeon similar to ancestor of dodo Dodo

11. Annotations available in RM Assessor

Annotation	Meaning
	Correct response
×	Interactivesponse
ion from	Omission mark
BOD previet pag	Benefit of doubt given
CON	Contradiction
RE	Rounding error
SF	Error in number of significant figures
ECF	Error carried forward
L1	Level 1
L2	Level 2
L3	Level 3
NBOD	Benefit of doubt not given
SEEN	Noted but no credit given
I	Ignore

The breakdown of Assessment Objectives for GCSE (9-1) in Combined Science A:

	Assessment Objective		
AO1	Demonstrate knowledge and understanding of scientific ideas and scientific techniques and procedures.		
AO1.1	Demonstrate knowledge and understanding of scientific idea.		
AO1.2	Demonstrate knowledge and understanding esachtific techniques and procedures.		
AO2	Apply knowledge and moustanding of scientificial as and scientific enquiry, techniques and procedures.		
AO2.1	Apply kny fedge and understanding of scientific ideas.		
AO2.2	Apply knowledge and understanding of scientific enquiry, techniques and procedures.		
AO3	Analyse information and ideas to interpret and evaluate, make judgements and draw conclusions and develop and improve experimental procedures.		
AO3.1	Analyse information and ideas to interpret and evaluate.		
AO3.1a	Analyse information and ideas to interpret.		
AO3.1b	Analyse information and ideas to evaluate.		
AO3.2	Analyse information and ideas to make judgements and draw conclusions.		
AO3.2a	Analyse information and ideas to make judgements.		
AO3.2b	Analyse information and ideas to draw conclusions.		
AO3.3	Analyse information and ideas to develop and improve experimental procedures.		
AO3.3a	Analyse information and ideas to develop experimental procedures.		
AO3.3b	Analyse information and ideas to improve experimental procedures.		

					AO	
Question		on	Answer	Marks	element	Guidance
13	(a)		Spores / fungus Travels in wind	2	2 x 1.1	ALLOW examples of transfer by
			from Notesale.	.0.		humans/animals/insects e.g. on gardening gloves/tools ALLOW travels in the air / direct contact between plants (shoots) / spread by rain IGNORE soil/water DO NOT ALLOW inherited
	(b)	Pr	eview page 30	3		NOTE the idea of 'less' or 'reduced' must be seen once in the answer to gain 3 marks
			Reduces the rate of photosynthesis		2.1	ALLOW chloroplast is the site for photosynthesis ALLOW cannot trap enough sunlight energy (for photosynthesis) DO NOT ALLOW chloroplast is the site for respiration
			Photosynthesis produces (less) oxygen/glucose		1.1	ALLOW no glucose produced ALLOW correct word or symbol equation for photosynthesis DO NOT ALLOW less carbon dioxide is produced
			Idea that glucose is needed for respiration		1.1	ALLOW idea that oxygen is needed for respiration ALLOW correct word or symbol equation for respiration
	(c)	(i)	Restriction	3	3 x 1.1	
			Ligase			DO NOT ALLOW lipase
			✓ Antibiotic resistance markers			ALLOW marker gene ALLOW idea of using antibiotics to see if they affect bacteria, those unaffected contain the gene

J250/08	Mark Scheme		June 2024	
Question	Answer	Marks	AO element	Guidance
	0 marks No response or no response worthy of credit.	۱.0	ik	 Idea that eggs were being destroyed faster / overhunted than the dodos could reproduce animals introduced by humans out-competed dodos for food not enough time for dodos to adapt to grow bigger wings / escape predators / nest in trees
(b)	DNA / fossils	1	1.1	ALLOW comparing bone structure
Pr	eview from 44 of 45 page 44 of 45			