Unit 3 Sustainability & Interdependence

Key Area 3.2 Plant & Animal Breeding Answers

1.

	Acceptable Answer	Total mark
	15%	1
	413·44	1
	Cross-breeding increases milk yield and fat but reduces protein production	1
	Inbreeding depression	1
	F_2 is genetically variable	1

2. A

3.

(a)		Cold/frost tolerant/resistant **OR** low compensation point **OR** hybrid vigour **OR** fast growing/high yield/disease resistant **Any 2**	**1**	harsh conditions
(b)	**(i)**	Some variety/homozygosity will be produced therefore losing hybrid vigour/ability to grow in cold conditions **OR** F_2 genetically variable/diverse	**1**	
	(ii)	Could produce new/better varieties (helpful in future breeding programmes) **OR** example	**1**	

4. C

5.

estion		Acceptable answer(s)	Max Mark	Unacceptable answer
(a)	(i)	Increases from 0·12 g per 100 g in 2005 to 0·14 in 2006. Decreases from 0·14 in 2006 to 0·02 in 2011. Remains constant at 0·02 from 2011 until 2012. **OR** using difference but must have correct reference points **All 3 = 2, 2 or 1= 1, units only required once.** **All figures correct but no units = 1** *extra data not negating*	**2**	
(a)	(ii)	8:1	**1**	
(a)	(iii)	0·0125	**1**	
(a)	(iv)	2·5 kg	**1**	
(b)	(i)	80%	**1**	
(b)	(ii)	Plants/they produce Bt toxin/poison **OR** a toxin/poison is produced So (leaf eating) insects deterred/harmed/killed damaged/repelled **1** so more photosynthesis/energy **OR** greater surface area for photosynthesis/energy for increased yield **OR** growth **OR** seed production **OR** reproduce more **1**	**2**	Substance Gene for toxin Stops/prevents
(b)	(iii)	25·6 kg	**1**	

6.

a		15	1
b		413·44	1
c		milk yield/fat content increased by crossbreeding protein content decreased by crossbreeding	1
d		Inbreeding depression	1
e	i	F2 has a variety of genotypes	1

7. D

8.

Question		Expected answer(s)	Max mark	Additional guidance
(a)		14250	1	

(b)

(i)	Number of grains.	1	NOT- amount of grains.
(ii)	Cultivar- Sloop Justification- Starch content of grains is higher/highest (so may produce more sugar). Cultivar- ULG2 Justification- Amylase activity is higher/highest.	1	 NOT- starch content is high. NOT- amylase activity is high.