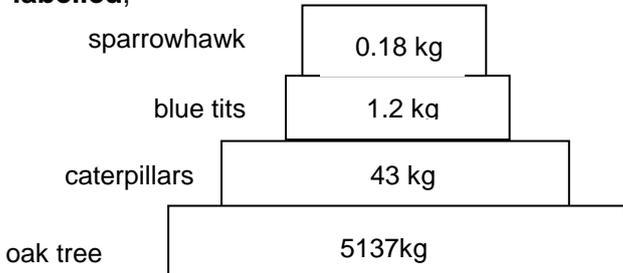
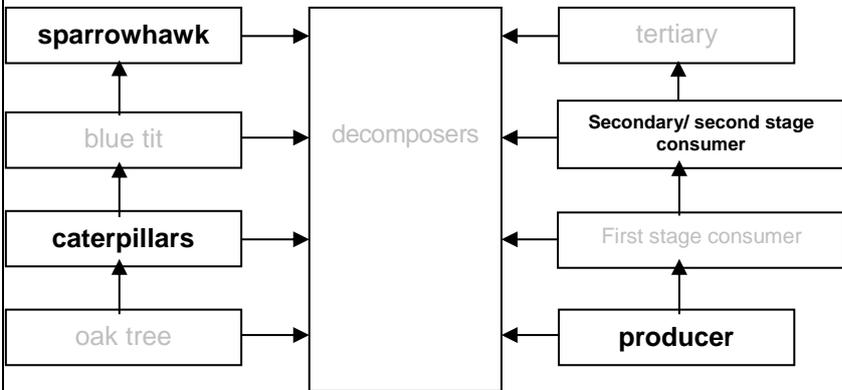


Question			Marking details	Marks Available
7/1	(a)	(i)	2 17 3456 1 all correct 1 mark	1
		(ii)	<p>I Four trophic levels showing the correct shape and labelled;</p>  <p>II All masses correct including units; (independent of shape)</p>	1
	(b)		Food chain column correct; Trophic level column correct;	1 1
				
(c)	iv	<p>Question 7/1 total</p>	1 [6]	

Question		Marking details	Marks Available
8/2	(a)	(i) 1344;; <i>If answer incorrect award 1 mark for</i> $16 \times 20 \times 4.2$	2
	(b)	(ii) 6720 (ecf from a(i)); Any 3 from: 1 mark each <ul style="list-style-type: none"> • Time between igniting the food and placing it under the boiling tube varies (OWTTE); • Distance of the burning food from the boiling tube varied/ not placed in the same spot; • {Type/ kind} of food (burnt) varied; • Incomplete burning; NOT {mass/size} of food varied/different volume of water/ not burnt for same length of tome/ different food Question 8/1 total	1 3
			[6]

Question		Marking details	Marks Available	
9/3	(a)	<p>Any one from:</p> <ul style="list-style-type: none"> • Does not kill/ harm} {insects/ organisms} {which are beneficial/ that pollinate crops/ which are useful}/ ORA; • Only 1 application/ it is cheaper/ ORA; <p>NOT bioaccumulation</p> <ul style="list-style-type: none"> • No (chemical) pollution/ ORA; 	1	
	(b)	<p>Fertilizers/GM (crops)/ selective breeding/named fertilizer/ manure/slurry/biological control/genetic engineering;</p> <p>NOT reference to pesticide use/herbicides</p>	1	
	(c)	(i)	1947/ 1948 ;	1
		(ii)	<p>Leaching/run off/spray carried by air onto water/(rain) {carried/ washed} it into rivers ;</p> <p>NOT DDT sprayed onto water/rain leaked it into rivers</p>	1
(iii)		<p>It (bio)accumulates/builds up (in tissues)/it is persistent/it concentrates in tissues/it is not destroyed after it enters the body;</p> <p>At the concentration found in the Bald Eagle it is {toxic/poisonous}/ORA;</p> <p>NOT kill/lethal</p> <p>2nd mark linked to 1st</p>	2	
		Question 9/3 Total	[6]	

Question		Marking details	Marks Available									
5	(a)	(i) One {form/version/variant} of <u>a</u> gene/{two/different}{forms/types/versions} of {the <u>same/a</u> } gene;	1									
		(ii) <ul style="list-style-type: none"> In a {heterozygous organism/OWTTE} the allele that is not {expressed/shown}/ only {expressed/shown} {when homozygous/when in a pair of recessive alleles}/ 	1									
	(b)	(i) Gametes correct (must use correct letter for this mark); Mechanics of cross correct; Allow ECF of incorrect gametes but must use B/b	2									
		<table border="1" style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td>Gametes</td> <td>B</td> <td>b</td> </tr> <tr> <td>B</td> <td>BB</td> <td>Bb</td> </tr> <tr> <td>b</td> <td>Bb</td> <td>bb</td> </tr> </tbody> </table>	Gametes	B	b	B	BB	Bb	b	Bb	bb	
		Gametes	B	b								
B	BB	Bb										
b	Bb	bb										
(ii) 75%/ 0.75/ $\frac{3}{4}$ / 3 in 4; NOT ratio	1											
(iii) 3 : 1 ;	1											
Question 5 Total			[6]									

Question		Marking details	Marks Available
6	(a)	There are {46 chromosomes/(23) pairs/has a diploid number/ not haploid/has both X and Y;	1
	(b)	No {corresponding/matching} part of chromosome (for paired allele)/only has one X chromosome/ only has one {copy of the gene/allele};	1
	(c)	Linearly/in a line/in a row;	1
		Question 6 total	[3]

Question		Marking details	Marks Available
7	(a)	<i>Penaeus japonicus</i> ; Correct spelling and format	1
	(b)	<i>Penaeus kerathurus</i> ; Correct spelling and format The {DNA/genetic} profile is <u>most</u> similar to the unknown species/ both are in the same genus/both have the same first {scientific/latin} name/ <u>most</u> similar <u>DNA banding pattern</u> ; NOT genetic fingerprint/ genotypes/genus	2
	(c)	They use the same name of genus and species/same {scientific/universal/Latin/international/binomial} name/scientific name is universal;	1
		Question 7 total	[4]

Question		Marking details	Marks Available
8	(a)	As the nitrate concentration increases, the gap between the shells increases (up to 4mm) and <u>levels off</u> ;	1
	(b)	Any two from: Predation; Disease; flow of water/tides/current other named chemical (e.g. phosphates/sewage/oil/salt) competition for {food/space}; pH; temperature; oxygen; NOT weather/climate	2
	(c)	(Nitrate causes) excess plant growth/ algal bloom/OWTTE; Plants {die/decay}/OWTTE; NOT bacteria eat plants {Bacteria/decomposers/ fungi} use oxygen for respiration; 3 rd mark point linked to 2 nd mark point	3
		Question 8 Total	[6]

Question		Marking details	Marks Available
9	(a)	$655 - 280 = 375$ $\frac{375}{655} \times 100 =$ $= 57.25/ 57.3\%$ NOT 57.0/57 Correct answer = 2 marks Allow 1 mark for correct working but incorrect answer	2
	(b)	(i) Flatworms compete with hedgehogs for {food/ invertebrates}; Therefore hedgehogs eat <u>more</u> birds' eggs (avoiding the competition); (must be linked for second mark)	2
		(ii) Numbers of { <u>some</u> birds/named birds (Snipe/Dunlin)} dropped (without introduction of hedgehogs);	1
		(iii) {Lack of/no/less} {predators/carnivorous mammals/carnivores}; Abundance of {food/ eggs}/large variety of food/less competition for food;	2
		Question 9 Total	[7]

Question		Marking details	Marks Available
10	(a)	One axis labelled- number of leaves and other axis labelled – length of leaf(mm); Suitable linear scales (including origin) + at least half of grid used; Bars correct heights (drawn with ruler);	3
	(b)	Continuous;	1
		Question 10 Total	[4]

Question	Marking details	Marks Available
11	<p>Indicative content</p> <p>Agouti/coat gene appeared as a mutation led to variation in the fur colour colour change was an advantage because of camouflage allowed the mutant to survive to breed mutant gene was passed on DNA comparison between modern deer mice and the remains of ancient ones.</p> <p>5 – 6 marks The candidate constructs an articulate, integrated account correctly linking relevant points, such as those in the indicative content, which shows sequential reasoning. The answer fully addresses the question with no irrelevant inclusions or significant omissions. The candidate uses appropriate scientific terminology and accurate spelling, punctuation and grammar.</p> <p>3 – 4 marks The candidate constructs an account correctly linking some relevant points, such as those in the indicative content, showing some reasoning. The answer addresses the question with some omissions. The candidate uses mainly appropriate scientific terminology and some accurate spelling, punctuation and grammar.</p> <p>1 – 2 marks The candidate makes some relevant points, such as those in the indicative content, showing limited reasoning. The answer addresses the question with significant omissions. The candidate uses limited scientific terminology and inaccuracies in spelling, punctuation and grammar.</p> <p>0 marks The candidate does not make any attempt or give a relevant answer worthy of credit.</p> <p>Question 11 Total</p>	<p>6</p> <p>[6]</p>