

Question	Marking details	Marks Available
6/1 (a)	Rat-tailed maggots; Sludgeworms; NOT maggots/worms	2
(b)	Water lice ; NOT lice	1
(c)	(i) Increases/gets higher/goes up; (ii) {Uses atmospheric oxygen/comes to the surface} to breathe/ description of adaptation-they {have a breathing tube/use their tail to breathe}/ takes oxygen out of the air/can breathe out of water ; NOT lift their heads to breathe	1 1
Question 6/1 Total		[5]

Question	Marking details	Marks Available
7/2 (a)	(i) Midday meal; smallest/ lowest {dose/ amount} of insulin (injected); NOT lowest level of glucose/ sugar/ carbohydrate in the meal	2
	(ii) She underestimated the amount of glucose/sugar/carbohydrate in the meal/more glucose than she {thought/estimated/ calculated} there would be; {Injected/dose/gave} too little insulin;	2
(b)	{Converts/ changes} glucose to glycogen (correct spelling); Stored/in the liver; NOT insulin stores glucose as glycogen 2 nd mark only credited if reference to glycogen	2
Question 7/2 Total		[6]

Question	Marking details	Marks Available
8/3 (a)	(i) A;	1
	(ii) Hairs {lying flat/lying down/hairs not stood up/lower}/ {erector muscle/ X} is relaxed; Sweat on the surface of the skin/A {shows/ is} sweating/more sweat; NOT sweat produced/sweat in the sweat duct/sweat is produced	2
(b)	Reduced blood flow (in the skin)/less blood in the capillaries; NOT less blood flowing through <u>the body</u> {Reduces/less} heat loss (reject no heat loss); ORA (Must state letter A)	2
(c)	It <u>contracts</u> ; NOT tenses/gets shorter	1
	Question 8/3 Total	[6]

Question	Marking details	Marks Available
9/4 (a)	As a fertilizer for <u>growth</u> /to make crops <u>grow</u> /to increase <u>growth</u> (rate)/to increase the {crop/ yield};	1
(b)	<p>Indicative content</p> <p>Nitrate pellets dissolve. Nitrate runs off into pond. Increased growth of aquatic plants/algal bloom. Sunlight blocked. Plants die. Decay. Decay microbes/ bacteria use oxygen in water for respiration. Aquatic animals/insects/fish die.</p> <p>5 – 6 marks</p> <p>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</p> <p>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</p> <p>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</p> <p>The candidate does not make any attempt or give a relevant answer worthy of credit.</p>	6
Question 9/4 Total		[7]

Question	Marking details	Marks Available
5 (a)	{the <u>genes</u> /all the alleles} in {an <u>organism/dog/it</u> }/ the {set/pair/two/both} <u>alleles</u> that {determine/control} {a characteristic/colour} of the dog/ the genetic make-up of {an organism/dog};	1
(b)	(i) {Cross/mate/breed} {the (black) Labrador/ it} with {a yellow Labrador/bb}/do a test cross; If all the {puppies/litter} are black then {the (black) Labrador/ it} is {homozygous/BB}; If there are yellow puppies in the litter then {the (black) Labrador/ it} is {heterozygous/Bb};	3
	(ii) 1 mark for each correct Punnett square;;	2

Gametes	B	B	Gametes	B	b
b	B	Bb	b	Bb	b
	b			b	b
b	B	Bb	b	Bb	b
	b			b	b

Alternative marking option

(b)	(i) Cross/mate/breed} the black Labrador with another Black Labrador which is known to be {heterozygous/Bb}; If all the puppies are black then the black Labrador is {homozygous/BB}; If there are some yellow puppies in the litter then the black Labrador is {heterozygous/Bb};	3
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Question	Marking details	Marks Available
(ii)	1 mark for each correct Punnett square;	2

Gametes	B	B	Gametes	B	b
B	BB	BB	B	BB	BB
b	Bb	Bb	b	Bb	bb

If bi not completed then first marking option must be used for marking punnett squares

[6]

Question 5 Total

Question	Marking details	Marks Available
6 (a)	(i) Continuous;	1
	(ii) {heights/lengths/shells/they} are bigger; NOT population bigger	1
	(iii) 4mm and 17mm (units required);	1
	(iv) $(29-17) = 12\text{mm}$ (units required);	1
(b)	(i) Any three from: food; temperature NOT climate/weather/heat (can be neutral); pH; NOT PH/Ph oxygen; parasites; disease; predation; pollution; NOT space/size of {pond/habitat} (not neutral)	Max 3
Question 6 Total		[7]

Question	Marking details	Marks Available
7 (a)	They are <u>genetically</u> identical/same {genotypes/DNA/genes};	1
(b) (i)	{Genetic composition/DNA/genes} of { <u>gametes/sex cells</u> } is {not identical/varies}; They inherit <u>different</u> {genes/DNA/chromosomes} from {both <u>parents/at fertilisation</u> };	2
(ii)	Evolution/ natural selection/adaptation to environment/survival value/survival of the fittest/ref to disease resistance;	1
Question 7 Total		[4]

Question	Marking details	Marks Available
8	<i>(a)</i>	
	(i) 1967;	1
	(ii) 0.27/ 0.3 / 0.266 / 0.267/ 0.26 ^r ; NOT 0.2/ 0.26	1
	<i>(b)</i>	
	(i) E;	1
	(ii) G/AC;	1
	Question 8 Total	[4]

Question	Marking details	Marks Available
9	Collect the blood from the { <u>gut/digestive system/stomach</u> } of leeches/collect the ingested blood; Compare { <u>genetic/DNA</u> } profiles with the {known/stored} {genetic/DNA} profiles; {A correct match/if they are <u>the same</u> } shows the endangered species exist; 3 rd point is linked to 2 nd point	3
Question 9 Total		[3]

Question	Marking details	Marks Available
10 (a)	(Radiation) causes mutation/ {damages/changes} the{genes/DNA/ chromosomes}; NOT mutation of cells or organs	1
(b)	Any three from: insecticides bioaccumulate/increases in concentration through a food chain; NOT passed along food chain can destroy {useful/other/all} insects is not selective; can affect fertility of animals at top of food chains; insects can develop{resistance/ immunity} to insecticides;	max 3
(c)	Any two from: size of population on mainland is larger than island population/ ORA; more insect predators on mainland than on island/ORA; fertile males (from mainland) cannot get to island; fewer sterile flies are needed (because the island is small);	max 2
Question 10 Total		[6]

Question	Marking details	Marks Available
11	<p>Indicative content</p> <p>Soya has increased rate of photosynthesis because of inserted bacterial gene. Therefore increased growth. Yield is increased. Soya withstands/ resistant to herbicide because of inserted bacterial gene. Weeds are killed. Reduces competition for resources (minerals/light/space/water/CO₂).</p> <p>5-6 marks</p> <p>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</p> <p>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</p> <p>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</p> <p>The candidate does not make any attempt or give a relevant answer worthy of credit</p>	[6]
Question 11 Total		