

CHERRY HILL TUITION AQA BIOLOGY AS PAPER 11 MARK SCHEME

1)

(a)(i)	Made of (different) <u>tissues</u> / more than one tissue;	1	
(a)(ii)	1. (Muscle) contracts; 2. (Arteriole) narrows/constricts/reduces size of lumen/vessel / vasoconstriction;	2	Assume that 'they' or 'it' = muscle Ignore: references to pressure Q Correct context for muscle contracts, vessel constricts
(b)(i)	Short <u>diffusion</u> distance/pathway;	1	Accept: thin diffusion pathway
(b)(ii)	(More) <u>time</u> for exchange/diffusion (of substances);	1	Accept: example of more <u>time</u> for specific substance to be exchanged
2(c)	1. <u>Water potential</u> (in capillary) not as low/is higher/less negative / water potential gradient is reduced; 2. Less/no <u>water</u> removed (into capillary); 3. By <u>osmosis</u> (into capillary);	3	Accept: 'blood or plasma' instead of 'capillary' 2. Accept converse: water remains in the tissue 2. Q Marking points 2. and 3. must be in the context of movement into the capillary Neutral: reference to more tissue fluid being formed as in the question stem Neutral: reference to lymphatic drainage

2)

(a)	Kingdom	Animalia	2	One mark for each correct column Do not award mark for last column if ' <u>Pardus</u> ' is <u>clearly</u> stated Accept: Panthera pardus in final box
	Phylum	Chordata		
	Class	Mammalia		
	Order	Carnivora		
	Family	Felidae		
	Genus	Panthera		
	Species	pardus		

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(b)	(For the leopard and cheetah) 1. More <u>hydrogen</u> bonds (form); 2. Similar DNA sequence(s) / similar base sequence(s) / more complementary bases / more base pairs;	2	Accept converse argument for leopard and puma Neutral: similar DNA 2. Idea of 'more' must be clear
c)(i)	1. Drop in population / many killed / only single female left; 2. Idea of reduced/low genetic variation/diversity / reduction in (variety of) alleles / smaller gene pool;	2	
c)(ii)	1. Mutation affecting sperm cell or production (in small population); 2. Errors during <u>meiosis</u> ; 3. Inbreeding / closely related cheetahs breed; 4. High chance of inheriting allele / high frequency of allele (in the population);	2 max	4. Accept: high frequency of homozygous/two recessive alleles
3)			
4(a)	Variation / differences within the same/a species;	1	
(b)(i)	1. Identical twins show genetic influence / differences between them show environmental influence; 2. Non-identical twins (also) show an environmental/non-genetic influence;	2	Neutral: allows a comparison It must be clear which set of twins is being referred to Do not credit repetition of bullet points in stem
b)(ii)	Genes play a <u>greater</u> role / environment plays a <u>lesser</u> role;	1	Must be comparative Neutral: genes are involved Neutral: involves genes and the environment
b)(iii)	Any suitable suggestion for a maximum of two marks e.g.: 1. Age; 2. Sex (non-identical twins); 3. Family/medical history (of mental illness); 4. No use of recreational drugs; 5. Ethnic origins;	2 max	Neutral: 'environment' as in question stem Neutral: unqualified ideas such as health / lifestyle

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4)

i(a)	Open/use tap / add water from reservoir;	1	
i(b)	<ol style="list-style-type: none"> 1. Seal joints / ensure airtight / ensure watertight; 2. Cut shoot under water; 3. Cut shoot at a slant; 4. Dry off leaves; 5. Insert into apparatus under water; 6. Ensure no air bubbles are present; 7. Shut tap; 8. Note where bubble is at start / move bubble to the start position; 	2 max	<p>Answer must refer to precautions when setting up the apparatus</p> <p>Ignore: references to keeping other factors constant</p>
i(c)	<ol style="list-style-type: none"> 1. Water used for support/turgidity; 2. Water used in photosynthesis; 3. Water produced in respiration; 4. Apparatus not sealed/'leaks'; 	2 max	Accept: water used in (the cell's) hydrolysis or condensation (reactions) for one mark. Allow a named example of these reactions
i(d)	<p>As number of leaves are reduced (no mark),</p> <ol style="list-style-type: none"> 1. Less surface area; 2. Fewer stomata; 3. Less evaporation/transpiration; 4. Less cohesion/tension/pulling (force); 	3 max	Accept: converse arguments

5)

(c)	<ol style="list-style-type: none"> 1. Change in base sequence (of DNA/gene); 2. Change in amino acid sequence / primary structure (of enzyme); 3. Change in hydrogen/ionic/ disulphide bonds; 4. Change in the tertiary structure/active site (of enzyme); 5. Substrate not complementary/cannot bind (to enzyme / active site) / no enzyme-substrate complexes form; 	3 max	<ol style="list-style-type: none"> 2. Accept: different amino acids coded for 2. Reject: different amino acids produced 4. Neutral: alters 3D structure /3D shape
(d)	<ol style="list-style-type: none"> 1. Resistance gene/allele; 2. On plasmid; 3. (Spread by) horizontal transmission; 4. (Involves) conjugation/pilus; 	3 max	<ol style="list-style-type: none"> 1. Q Reject: if in the context of immunity Neutral: vertical transmission 3. Reject: if any reference to bacteria dividing by mitosis 4. Q Ignore: conjunction

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6)

a)(i)	(We should maintain biodiversity to) Prevent extinction /loss of populations/ reduction in populations /loss of habitats / save organisms for future generations (idea of);	1	Neutral: references to 'playing God' / animal rights
a)(ii)	A suitable example of how some species may be important financially e.g. 1. medical / pharmaceutical uses; 2. commercial products / example given; 3. tourism; 4. agriculture; 5. saving local forest communities;	1 max	
(b)	1. Fewer plant species / decrease in plant diversity; 2. Fewer habitats/nesting sites; 3. Fewer niches; 4. Fewer food sources/varieties; 5. Less protection from predators/ hunters/environment;	2 max	Accept: converse arguments for islands with a high percentage of forest remaining 1. Neutral: fewer plants 2. Neutral: fewer homes 4. Neutral: less food
(c)	1. Number of (individuals/birds of) each species; 2. Total number of individuals/birds of all species;	2	1. Neutral: number of species 2. Accept: 'total number of birds' as given context for 'all species' in the investigation
(d)	1. (Larger birds have) a low(er) SA:VOL; 2. (So) less heat loss / more heat retained;	2	Neutral: reference to fat / feathers MP2 is independent of MP1

7)

(a)	1. Random; 2. Method e.g. number generator / number out of a hat; <i>OR</i> 3. Matched / all the same; 4. For e.g. age / sex;	2 max	Random number generator = 2 marks Same age = 2 marks
(b)	1. (Differences) are real/significant/not due to chance; 2. (As) bars/SDs do not overlap;	2	It = the difference 2. Accept: 'standard errors do not overlap' as told 'standard deviation' in the question stem

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(c)	1. No/slight (placebo) effect; 2. Group 2 and 3 results are similar/the same/ SDs/bars overlap;	2	2. Accept: other descriptions of Groups 2 and 3 2. Accept: that Groups 2 and 3 are not significantly different
(d)	1. (Allows) anomalies to be identified/ ignored/ effect of anomalies to be reduced / effect of variation in data to be minimised / concordant results; 2. (Makes) average/mean (more) reliable;	2	Accept: 'outliers' instead of anomalies 1. Reject: idea of not recording anomalies / preventing anomalies from occurring 1. Accept: 'cancels out anomalies' as bottom line response 2. Q Neutral: makes the average/mean more accurate 2. Ignore: 'more reliable' alone
e)(i)	1. Unethical/unfair not to treat patients; 2. Dangerous / could cause an asthma attack;	1 max	
e)(ii)	1. Ensures normal treatment does not affect results / improvements are only due to the spray; 2. (As) normal treatment is short-lived/ effective for less than 24 hours/ (24h) is long enough for normal treatment to wear off;	2	
(f)(i)	1. (Improvement scores) are qualitative / subjective/rely on own judgement/ different patients may assess symptoms differently; 2. Some patients may lie/exaggerate/want to please doctors;	2	Accept: converse arguments for measuring FEV ₁ e.g. quantitative/objective patients cannot lie 1. Neutral: empirical evidence
(f)(ii)	1. Not blind / patients knew they were not receiving treatment/ patients did not receive treatment; 2. (So) more likely to underestimate/give lower scores / did not expect to improve / less improvement;	2	

8)

(a)	0.1 and 0.5; Pressure in ventricle greater (than pressure in atrium);	2	Both figures must be correct. Comparison needed
(b)	1. (Ventricle has) thick wall / more muscle; 2. So <u>contractions</u> are stronger / harder;	2	2. Neutral: Contracts to produce more pressure 2. Neutral: Pump harder. 2. Neutral: Reference to a need to pump blood further/round the body.
(c)	85 / 86 / 85.7;	1	Ignore additional decimal places

