

Chapter 7 – Inheritance

Question	Answers	Extra information	Mark
1	lobed ears – inherited variation height – both pierced ears – environmental variation eye colour – inherited variation		1 1 1 1
2(a)i	nucleus – arrow pointing to central circle		1
(a)ii	chromosome – arrow pointing to one of the strands in the central circle		1
(a)iii	gene – arrow pointing to one of the bands on a long strand		1
(b)	DNA		1
3(a)	when no organisms of a species are found anywhere in the world		1
(b)	outbreak of a new disease change in the organism's environment		1 1
(c)	gene banks/nature reserves/captive breeding	Accept any other appropriate suggestion	1
4	[C] → D → E → A → B	1 mark for each step in the correct order	4
5(a)	number of spots/colour		1
(b)	combination of inherited and environmental factors e.g. if you eat a poor diet, your rate of growth may be reduced		1 1
(c)	histogram		1
6(a)	a section of DNA that codes/contains the information for a characteristic		1
(b)	Any three from: <ul style="list-style-type: none"> sperm contains chromosomes/genetic material from the biological father egg cell contains chromosomes/genetic material from the biological mother nuclei join during fertilisation embryo / baby produced has genetic material from both biological parents 		3

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(c)	Any three from: <ul style="list-style-type: none"> • image produced using X-rays • by Franklin and Wilkins • image shared with Watson and Crick. • (Watson and Crick) deduced double-helix structure 		3
7(a)	inherited variation determined by genes / DNA / genetic material, with no influence from environmental factors		1 1
(b)	Any three from: <ul style="list-style-type: none"> • in both counties, O is the most common • in both countries, AB is the least common • in India, (more than) three times as many people have blood group B than in the UK • O and A are similar in the UK, but O is nearly twice as common as A in India 		3
8	at least one named example of a continuous variable, e.g. height/mass can take any value within a range so shows continuous variation at least one example of discontinuous variation, e.g. blood group/eye colour can only have certain/discrete values which shows discontinuous variation		1 1 1 1 1 1
9(a)	examples of inherited variation – blood group/eye colour variation occurs as a result of genetic information/ characteristics passed to them from their biological parents examples of environmental variation – hair style/scar/tattoo scar occurs as a result of an injury in a person’s environment/ people’s hair styles/tattoos vary as a result of their lifestyle choices; therefore, variation seen occurs as a result of their environment	Accept any other correct examples	1 1 1 1

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(b)	measurements that have been grouped together into one numerical size, e.g. shoe size/clothes size there is a set number of values they can take		1 1
10	Any six from: <ul style="list-style-type: none"> • there is variation within the species • some giraffes have slightly longer necks • giraffes with longer necks can reach more leaves/food • these organisms are more likely to survive and reproduce • genetic material/genes for these advantageous characteristics are passed on to their offspring • this is known as natural selection • this process is repeated over many generations • all giraffes now have long necks 		6
SPACED LEARNING QUESTIONS			
11(a)	protein – used for growth and repair carbohydrate – provides energy lipid (fat) – used to insulate the body and provide energy	1 mark for one correctly matched	2
(b)	orange		1