

Answers to examination-style questions

Answers	Marks	Examiner's tips
1 (a) environmental influence is greater than genetic;	1	This question tests factual knowledge.
(b) identical twins have same genotype; compare identical and non-identical twins in same environment; if genetic effect is greater, there will be more similarity between identical twins than non-identical twins; the sample should be large; use a statistical test;	4 max	This question tests factual knowledge. It also allows the effect of different genotypes to be compared. Using a large sample size – the more individuals that are selected the smaller the probability that chance will influence the result. Analysis of the data collected – accepting that chance will play a part, data collected can be analysed using statistical tests to determine the extent to which chance may have influenced these data. These allow us to decide whether any variation observed is the result of chance or if it is more likely to have some other cause.
2 (a) larger genetic component (<i>must be comparative</i>);	1	You must put 'larger', not just 'large', because the question asks about relative effects.
(b) number of cases studied; matched samples; age of twins; named environmental factor; (<i>allow 2 marks for 2 different factors if no overlap in effect</i>), e.g. family history of diabetes; method of diagnosis; same sex in non-identical twins;	2 max	You must suggest two factors! Factors should increase the accuracy of results or control key variables.
3 length controlled by many genes/polygenes; each gene may have different alleles/idea of additive effects; environmental factors/or named factor; how a named factor may affect growth of seeds (<i>2 max</i>);	4	You must name a correct cause and then give an explanation for your named cause. The answer space is set out to help you give a clear answer for each cause.
4 (a) mutations; random fusion of gametes;	2	Only give two ! No explanation needed. Many gametes are released and it is chance which ones fuse.

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(b) range can be influenced by one extreme value; standard deviation shows the spread about mean; range only shows highest and lowest values/extremes; SD allows statistical use; tests whether or not differences are significant;	2 max	You must explain your answer. A range just gives the spread of data. SD gives more idea about the range of values either side of the mean.
5 (a) polygenic/several genes involved/multiple alleles;	1	
(b) graph symmetrical/mean and mode identical/not skewed/even distribution around middle;	1	Only one answer is needed and it must be from the graph!
6 (a) (i) controlled by one/two/few genes versus many/polygenic;	1	
(ii) limited/none versus significant;	1	Discontinuous variation gives distinct forms without any intermediates.
(iii) limited/few versus wide/many;	1	
(b) named difference in environmental factor during pregnancy, e.g. nutrient supply;	1	'Suggest' means there can be several correct responses.