

Variation MS

QUESTION 1

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	any two from: <ul style="list-style-type: none"> • colour of dish or all dishes black • (same) amount of each seed • position of dishes or all dishes in same place / garden • time observed / visited / left 	ignore size of dish ignore wood	2
b)	sunflower		1
c)i)	(No) named seed does not fit pattern or millet / safflower / corn eaten a lot but have little fat or the seed with the highest percentage eaten has least fat	accept converse	1
c)ii)	table 1 mark <ul style="list-style-type: none"> • highest number of visitors or large range of visitors table 2 mark <ul style="list-style-type: none"> • high percentage eaten or contain high fat for energy / insulation	allow separate references to sunflower and niger allow most popular allow most eaten	1 1
Total marks			6

QUESTION 2

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	a mutation occurs or variation in size / shape of pelvis large / wide birth canal / pelvis allowed passage of wide skull / brain link between brain size and intelligence those with larger pelvis / brain more likely to survive / reproduce		1 1 1 1
Total marks			4

QUESTION 3

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	mutation	correct spelling only ignore other adjectives eg random / spontaneous	1
b)	idea of mutant gene / new form / this allows hatching (of males) (individual with advantage) (more) survive / (more) live / (more) don't die (so survivors) breed / reproduce	ignore references to X / Y chromosomes allow immunity rather than resistance throughout	1 1
	mutation / gene passed (from survivors) to offspring / next generation	allow resistance / characteristic for gene 'gene passed on' is insufficient	1
Total marks			5

QUESTION 4

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	any four from ✗ mutation ✗ produces longer snake or there is variation in snake length ✗ longer snake less susceptible to toxin or longer snake survives ✗ survivors reproduce ✗ gene passed to next generation	do not accept 'had to mutate / decided to mutate' do not accept 'had to adapt and became longer' allow characteristic passed to next generation	4
Total marks			4

QUESTION 5

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	in 1978 fewer finches or population smaller any two from no beaks less than 8mm no beaks greater than 11.5 / 12mm mean / average beak size higher	if these points not given allow smaller range of beak sizes for 1 mark	1 2

b)	variation or range or mutation of beak sizes	do not accept idea that drought / seed size caused mutation	1
	birds with larg(er) beaks are better adapted for feeding	accept idea of competition for food / seeds amongst finches	1
	birds with larg(er) beaks survive	accept (only / more) birds with large beaks were better competitors	1
	birds with larg(er) beaks breed or gene / allele for large beak passed on	do not accept large beak passed on	1
Total marks			7

QUESTION 6

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	sulfur dioxide		1
b)i)	mutation		1
b)ii)	pale form now (more) easily seen (by predators) or dark form now less easily seen (by predators)	accept ref to camouflage	1
	so pale form (more) likely to be eaten or dark form less likely to be eaten		1
	so dark form (more likely to) breed / pass on genes or pale form less likely to breed / pass on genes		1
Total marks			5

QUESTION 7

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	any one from: ✘ (type of / amount of) soil / minerals / nutrients / pH ✘ amount of water / time of watering ✘ space between plants / plants and	list principle ignore carbon dioxide / same number of plants / food do not allow temperature / light / exposure to wind	1

	wall λ time for growth		
b)i)	North wall		1
b)ii)	nugget		1
c)	has not tested all varieties / nugget / champion against all walls	do not allow repeat experiment	1
Total marks			4

QUESTION 8

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	use of quadrat / point frame randomly placed / random sampling	allow description ignore reference to transects	1 1
b)i)	6		1
b)ii)	more light in A / in field / where sunny more / better / faster photosynthesis in A / with more light	ignore sun allow converse	1 1
b)iii)	use light meter / measure light intensity in both habitats take many measurements at same time of the day or laboratory / field investigation with 2 batches high light and low light (1) count or number of flowers in each (1)	counting point is dependent on investigation point	1 1
c)	more glucose / energy available for growth	allow other named product eg protein allow if more energy produced dependent on 1st mark	1 1
Total marks			9