

Carbon Cycle MS

QUESTION 1

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	microorganisms / microbes / bacteria / fungi / decomposers / detritivores / named decay / breakdown / digest / decompose / rot (bean plant) respiration (of microorganisms etc / aphids) carbon dioxide released (from respiration of microorganisms etc / aphids)	do not accept germs allow mould ignore aphids ignore eat allow burning / combustion allow carbon dioxide released / produced (from burning / combustion) ignore other parts of the carbon cycle ignore formation of fossil fuels	1 1 1 1
Total marks			4

QUESTION 2

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	any correct named physical environmental condition, e.g. light / water / rain / temperature / minerals / nutrients / space (between plants) genes / inheritance OR any correct named biotic factor e.g. predation / disease		1 1
b)	mass of crop also depends on number of pods (per plant) / size / mass of each pea		1
c)	microorganisms / bacteria / fungi / decomposers / detritus feeders / named decompose / rot / break down / decay / digest		1 1

	(these organisms) respire		1
	(decay / respiration / microorganisms etc) releases carbon dioxide		1
Total marks			7

QUESTION 3

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	X respiration	correct order only allow decay / decomposition / rotting ignore breakdown / disintegrate	1
	Y combustion / burning		1
b)	any three from: photosynthesise / absorb carbon dioxide release carbon dioxide / respire eaten by animals fed on / decayed by microorganisms	accept are producers or produce / make biomass / glucose / other named do not accept photosynthesis releases CO ₂ ignore eaten by microorganisms	3
c)	any two from: (in tropical rainforest conditions are) warm(er) / hot damp / moist / wet / humid a lot of microorganisms a lot of material to decay	ignore rain allow warm(er) so enzymes work faster for 2 marks	2
Total marks			7

QUESTION 4

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
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	0 marks	Level 1 (1-2 marks)	Level 2 (3-4 marks)	Level 3 (5-6 marks)	
	No relevant content.	For at least one process either the organism that carries it out or the carbon compound used or the carbon compound produced is described or for at least one organism either the carbon compound it uses or the carbon compound it produces is described or at least one process is named	For some processes (at least one of which is named) either the organisms involved or the carbon compounds used or the carbon compounds produced are described	For at least one named process an organism and either the carbon compound used for the process or the carbon compound produced by the process are described and for other processes (at least one of which is named) either the organism or the carbon compounds used or the carbon compounds produced are described (as in Level 2)	
	<ul style="list-style-type: none"> • (green) plants photosynthesise • photosynthesis takes in carbon dioxide • (green) plants use carbon to make carbohydrate / protein / fat / organic compounds / named (e.g. enzymes / cellulose) • animals eat (green) plants (and other animals) • (green) plants respire • animals respire • respiration releases carbon dioxide • (green) plants and animals die • microorganisms decay / decompose / rot / break down / feed on dead organisms • microorganisms respire 				
Total marks					6

QUESTION 5

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	photosynthesis		1
b)i)	140		1
b)ii)	(10 billion tonnes) more added (to atmosphere) than removed	allow ecf from part (b)(i)	1
Total marks			3

QUESTION 6

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	D		1
a)ii)	A		1
b)i	air / oxygen (can enter) for (aerobic) respiration	ignore other factors entering or leaving do not accept anaerobic respiration	1 1

b)ii)	(more) minerals / nutrients / salt(s) / ions or named mineral / element available	ignore fertility / fertiliser allow symbols allow eg mulching / reducing weeds or retain water	1
Total marks			5

QUESTION 7

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	70	award 2 marks for correct answer irrespective of working allow 1 mark for 30 + 10 + 24 +6 (with wrong answer or no answer), do not award this sum if other figure(s) are included in the addition	2
a)ii)	6	award 2 marks for correct answer irrespective of working award 2 marks for correct answer to (a)(i) – 64 (ecf) award 1 mark either for 70 – 64 or answer to (a)(i) – 64 with no answer or incorrect answer	2
b)i	photosynthesis		1
Total marks			5

QUESTION 8

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	B and D	both required in any order	1
b)	any two from: ⊖ carbohydrate / named example ⊖ protein / enzyme ⊖ amino acid ⊖ hormone / named plant hormone ⊖ lipid / fat / oil / wax ⊖ chlorophyll ⊖ DNA ⊖ vitamin(s)	do not accept compounds restricted to animals allow 2 marks for 2 named examples do not allow a general name and a named example for 2 marks (eg award 1 mark only for carbohydrate and starch) allow 2 marks for 2 named examples	2
c)	contains minerals / salts / ions / nutrients / named (needed by plants) for health /	ignore 'food' do not allow vitamins / glucose / energy etc	1 1

	better growth	for / help plant growth is insufficient ignore moisture retention / soil structure ignore more plants allow examples linked to mineral eg contains magnesium to make chlorophyll for 2 marks	
Total marks			5