WJEC (Eduqas) Biology GCSE Topic 6.2 The Principle of Material Cycling Questions by Topic - Mark Scheme

1.

Marking details	Marks Available
Indicative content	6

Carbon dioxide taken up by plants for photosynthesis.
Carbon used in manufacture of carbohydrates/ sugar/ starch/ protein/ fat.
Plants eaten by animals.
Plants and / or animals respire and return carbon (dioxide) to air.
Plants and/ or animals die.
Decay/ named organisms release carbon (dioxide) to air.
Reference to fossilisation due to lack of decay.
Combustion/ burning of fossil fuels releases carbon (dioxide).

5-6 marks
The candidate constructs an articulate, integrated account correctly linking relevant points, such as those in the indicative content, which shows sequential reasoning. The answer fully addresses the question with no irrelevant inclusions or significant omissions. The candidate uses appropriate scientific terminology and accurate spelling, punctuation and grammar.

3-4 marks
The candidate constructs an account correctly linking some relevant points, such as those in the indicative content, showing some reasoning. The answer addresses the question with some omissions. The candidate uses mainly appropriate scientific terminology and some accurate spelling, punctuation and grammar.

1-2 marks
The candidate makes some relevant points, such as those in the Indicative content, showing limited reasoning. The answer addresses the question with significant omissions. The candidate uses limited scientific terminology and inaccuracies in spelling, punctuation and grammar.

0 marks
The candidate does not make any attempt or give a relevant answer worthy of credit

Question 1 Total	**[6]**

2.

Question		Marking details	Marks Available
(a)		Bacteria/ fungi;	1
(b)		{The leaves/they} have {decayed/rotted/decomposed}; {More/faster} at {15 °C / the high temperature/highest temperature}; ORA	2
(c)	(i)	Any two from: same type of leaves/from same tree; NOT same leaves same size of leaf; equal volumes of soil; NOT amount/ type/moisture content same {length amount} of time/both one month;	max 2
	(ii)	To make a (*qualified)* conclusion (e.g. meaningful/valid)/to make a comparison/to avoid invalid results/to determine that the temperature causes the difference; NOT to make more {reliable/accurate}/ avoid bias	1
(d)		Carbon dioxide/CO_2; NOT CO^2/Co	1
(e)			

3.

Sub-section			Mark	Answer	Accept	Neutral answer	Do not accept
(a)	i		4	I accurate plotting;; all correct = 2 marks one error = 1 mark more than one error = 0 marks II one accurate line through centre of plots; III lines labelled – 1.0 mm **and** 0.1mm;			
	ii		1	{1 mm/large/larger/ higher} mesh size has {higher/ more} (%) decay/ ORA;			Not quicker decay
	iii		2	any **two** from: mass; (leaf) area; {species/tree}; age; moisture content;	weight		type of leaf/ type of tree/ size of leaf/ amount of leaf/ same shape leaf
	iv		1	bacteria/fungi/mould;			
	v		1	too {cold/hot/dry/wet}/ hotter/ colder/ drier/ wetter;	pH too {high/ low}		Climate/ weather
(b)			1	{Releases/ puts back/ restores/ gives/ recycles} {nutrients/ minerals/ ions/ named nutrient};			
Total Mark			10				

4.

Question				Marking details	Marks available					
					AO1	AO2	AO3	Total	Maths	Prac
	(a)									
		(ii)		B		1		1		
	(b)	(i)		D		1		1		
	(c)	(i)		X = Photosynthesis (1) Y= Feeding (1) Accept eating/ consuming/ ingestion	2			2		
		(ii)		starch		1		1		

5.

Sub-section			Mark	Answer	Accept	Neutral answer	Do not accept
(a)	i		1	photosynthesis;			
	ii		1	respiration;			
	iii		1	carbon dioxide;	CO_2		
(b)			1	{releases/ adds/ produces/ more} carbon dioxide;	CO_2/ gas X if named in iii		CO^2/ Co_2
Total Mark			4				

6.

Sub-section			Mark	Answer	Accept	Neutral answer	Do not accept
(a)	(i)		1	dissolved oxygen mg/l;			
	(ii)		2	all 5 plots correct 2 marks 4 plots correct 1 mark 0/1/2/3 plots correct 0 marks ±½ small square tolerance			
	(iii)		1	accurate line joining all plots;			
(b)			1	bacteria/fungi;			
(c)	(i)		1	250/ from candidates graph;			

7.

Question				Marking details	Marks available					
					AO1	AO2	AO3	Total	Maths	Prac
	(b)			Microorganisms/bacteria/fungi/ decomposers (1) Decay/ decomposition/ break down of animal bodies/ break them down (1)		2		2		

8.

Question				Marking details	Marks available					
					AO1	AO2	AO3	Total	Maths	Prac
	(b)			Any 3 (x1) from: 1. (Increased) competition for light/ light is blocked (1) 2. some {algae/ plants} (start) dying (1) 3. {bacteria/ microbes/ decomposers} {decomposing / rotting/ breaking down} dead plants (1) 4. use up oxygen for respiration (1) 5. arctic char suffocate/ owtte (1)	3			3		

9.

Question		Marking details	Marks Available
(c)	(i)	increased	[1]
		increased	
		decreased; all **three** required for one mark	
	(ii)	Bacteria/ fungi/ mould;	
		NOT decomposers/ microbes/ algae	[1]

10.

Sub-section			Mark	Answer	Accept	Neutral answer	Do not accept
(a)	(i)		1	Arrow must indicate the 45 au/200 m coordinate.;			
	(ii)		2	{Microorganisms/bacteria/ decomposers} {reproduce/multiply/ divide} / {large numbers of/ more} {microorganisms/bacteria/ decomposers}; (microorganisms/bacteria/ decomposers) use oxygen {in respiration/ to respire};	microbes		