EDEXCEL GCSE ADDITIONAL SCIENCE (360SCIENCE)

SCIENCE



EXAM QUESTION PACK

UNIT B2 FOUNDATION TIER 5016F PAPERS

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Centre No.						Paper Reference (complete below)								Surname	Initial(s)
Candidate No.										F	/	1	F	Signature	

Paper Reference(s)

5016F/1F 5028F/1F

Edexcel GCSE

Additional Science (5016F)

Biology (5028F)

B2 – Topics 1 to 4

Foundation Tier

Tuesday 7 June 2011 – Afternoon

Time: 30 minutes

Materials required for examination
Calculator

Items included with question papers
Nil

Examiner's use only

Team Leader's use only

Question Number	Leave Blank
1	
2	
3	
4	
5	
6	
7	
Total	

Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initial(s) and signature, and complete the paper reference.
Check that you have the correct question paper.
Answer ALL the questions. Write your answers in the spaces provided in this question paper.
Do not use pencil. Use black ink.
Show all stages in any calculations and state the units. Calculators may be used.
Include diagrams in your answers where these are helpful.

Information for Candidates

The marks for individual questions and the parts of questions are shown in round brackets: e.g. **(2)**.
There are 7 questions in this question paper. The total mark for this paper is 30.
There are 12 pages in this question paper. Any blank pages are indicated.

Advice to Candidates

You are reminded of the importance of clear English and careful presentation in your answers.

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Turn over

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Leave blank

1. Tigers are predators.



(a) Describe how the named structures help tigers survive.

(i) Pointed teeth

.....

.....

(1)

(ii) Large muscular back legs

.....

.....

(1)

(iii) Striped coat

.....

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(1)

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Leave blank

(b) A species of tiger used to be found on Java, a large island near Australia.
Suggest **two** reasons why this tiger is now extinct.

.....

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.....

.....

(2) Q1

(Total 5 marks)

Leave blank

2. When certain substances are in excess, they can become pollutants and cause environmental problems.
Draw one straight line from each pollutant to the environmental problem it causes.

pollutant	**environmental problem**
carbon dioxide	acid rain
sulphur dioxide	global warming
CFCs	ozone depletion
	eutrophication

Q2

(Total 3 marks)

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Leave blank

3. Willow trees grow faster than most other trees and can grow in waterlogged soil. Waterlogged soil stops air getting to their roots.



(a) Use words in the box to complete the sentences.

carbon dioxide	diffusion	leaves	
oxygen	respiration	photosynthesis	roots

Willow trees absorb light for ..... .

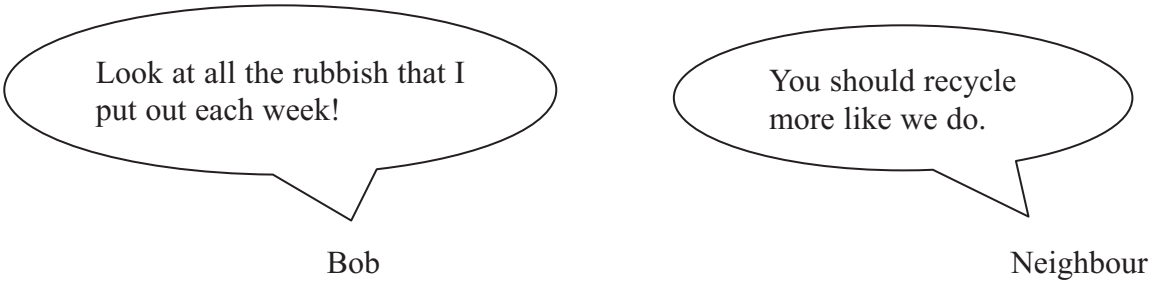
They absorb most water through their ..... .

Oak trees do not grow very well in waterlogged soils because their roots cannot absorb enough ..... .

(3)

Leave blank

(b) Bob has three willow trees in his garden.
He trims the trees often because they grow quickly.
Bob meets his neighbour when he is putting his rubbish out to be collected.



(i) Bob decides to compost his willow cuttings at home.
Suggest how composting waste helps the environment.

.....

.....

(1)

(ii) Bob's neighbour recycles paper.
State one reason why **all** paper cannot be recycled.

.....

.....

(1)

Q3

(Total 5 marks)

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Leave blank

4. Write either **yes** or **no** in each box to complete the table.
The first row has been done for you.

		aerobic respiration	**anaerobic respiration**
	provides energy	yes	yes
(a)	uses oxygen		
(b)	uses glucose		
(c)	produces lactic acid		

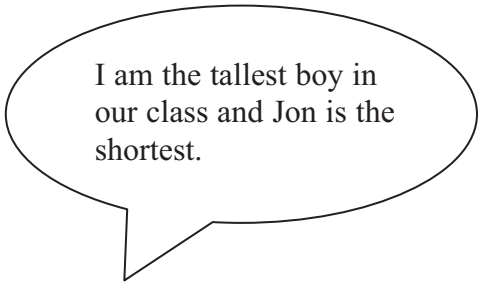
Q4

(Total 3 marks)

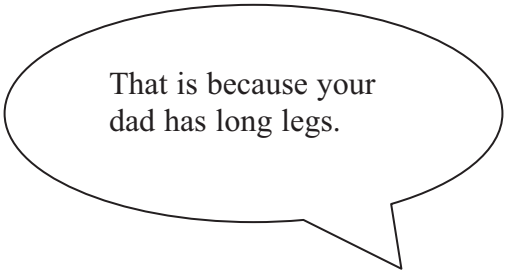
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5. Colin and Freddie were discussing the height of boys in their class.



Colin



Freddie

They measured the heights of the boys in their class to the nearest centimetre.
The table shows their results.

152	165	187	157
166	174	196	166
175	179	184	163

(a) What is the range of boys height in this class?

answer = ... cm
(1)

(b) Height is influenced by a number of factors.
State **two** factors that influence height.

1 .....

2 .....
(2)

(c) Name the type of cell division that takes place in humans for growth to occur.

.....
(1)

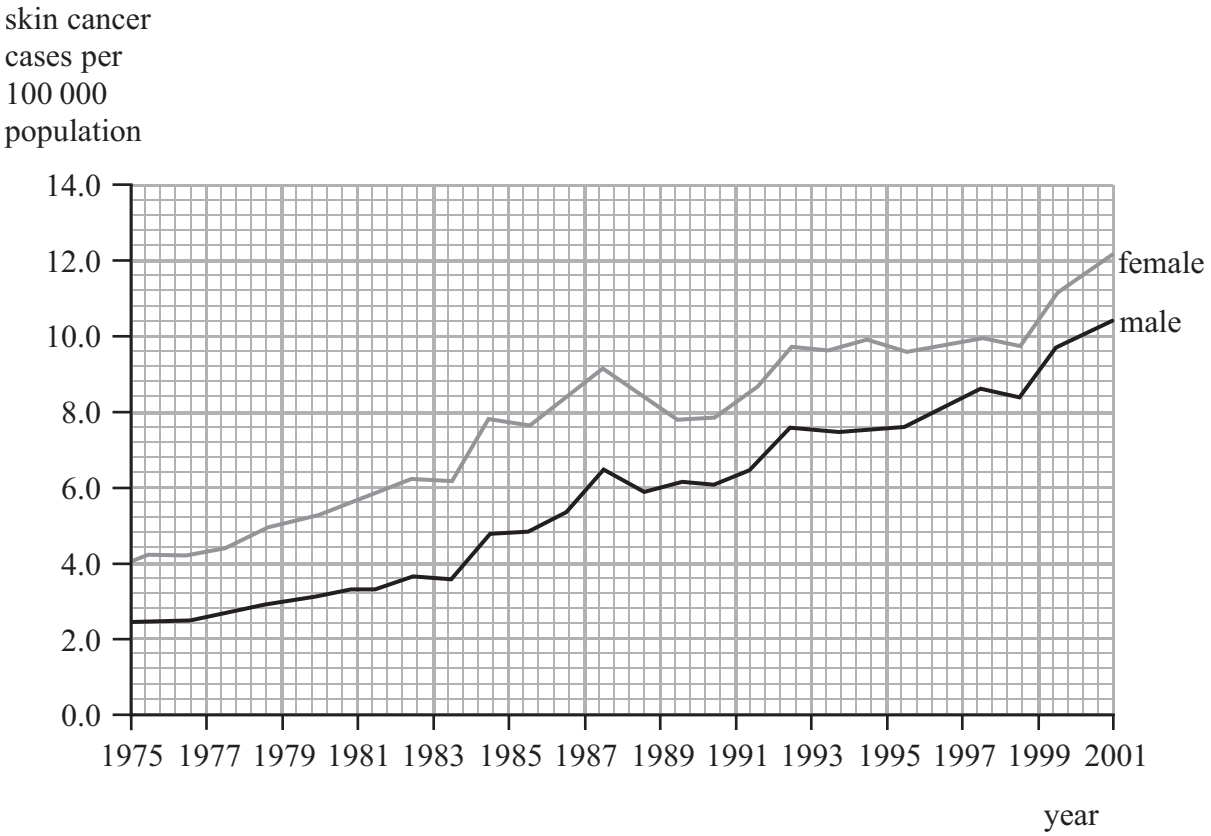
Q5

(Total 4 marks)

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6. The graph shows changes in the number of cases of skin cancer in males and females from 1975 to 2001.



(a) Compare the pattern of skin cancer cases in males and females from 1975 to 2001.

.....

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.....

.....

(2)

(b) The occurrence of skin cancer is a living indicator.
State another example of a living indicator that could be used to monitor air pollution.

.....

(1)

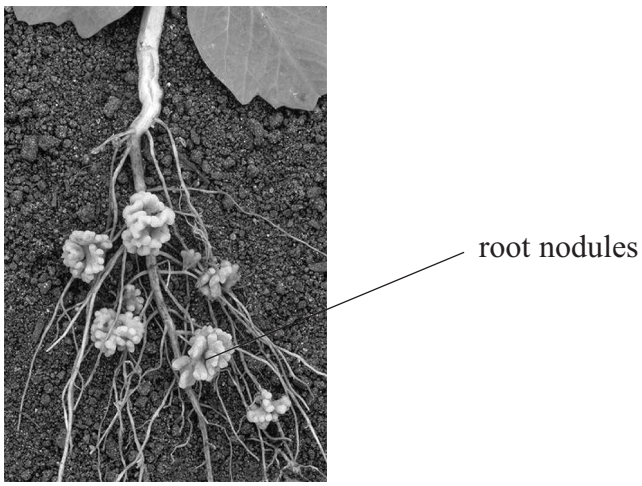
Q6

(Total 3 marks)

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Leave blank

7. Pea plants have root nodules that contain bacteria.



Wally Eberhart, Visuals Unlimited/Science Photo Library

(a) Explain how the root nodules help the pea plant to grow.

.....

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.....

.....

(2)

(b) When the pea plant dies, compounds containing nitrogen are released into the soil. Explain how these compounds containing nitrogen are cycled through the environment.

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(2)

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Leave blank

(c) Farmers use compounds containing nitrogen as fertilisers.
Describe the effects of overuse of these fertilisers on rivers.

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(3) Q7

(Total 7 marks)

TOTAL FOR PAPER: 30 MARKS

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Mark Scheme (Results)

June 2011

360Science

GCSE Additional Science
Structured Paper B2 (5016F/1F)

GCSE Biology
Structured Paper B2 (5028F/1F)

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June 2011
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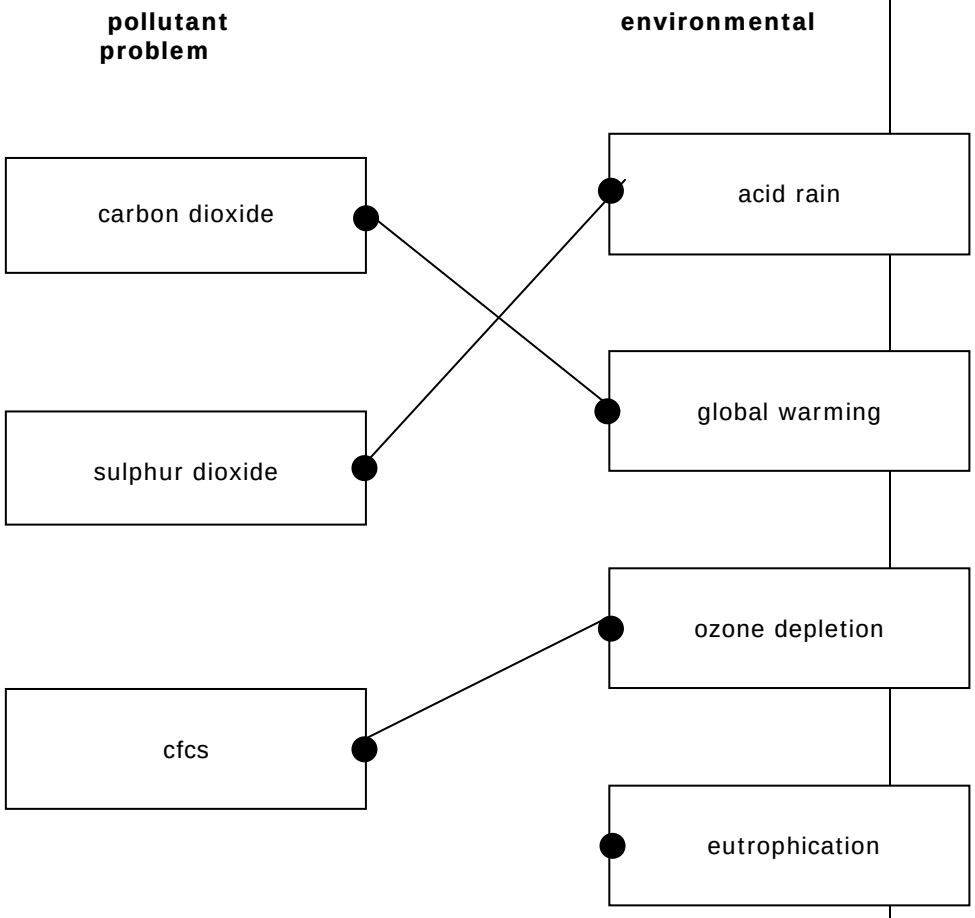
5016F & 5028F Mark Scheme
June 2011

Question Number	Answer	Additional guidance	Mark
1(a)(i)	grip/hold on to/rip/tear prey;	Accept: kill/bite/ strangle (crush windpipe) Ignore: chew/cut chew/cut	**(1)**

Question Number	Answer	Additional guidance	Mark
1(a)(ii)	sprint /run fast / accelerate/pounce;		**(1)**

Question Number	Answer	Additional guidance	Mark
1(a)(iii)	camouflage/ blend in with surrounding / prey can not see them(until too late)/ can creep up on prey/ less likely to be seen by hunters ;	Ignore: hide	**(1)**

Question Number	Answer	Additional guidance	Mark
1(b)	Any **two** from: 1. habitat destruction/ 2. lack of prey / 3. (over) hunted / 4. outcompeted / 5. more difficult to find a mate;	 Accept: natural disaster Accept: lack of food / not enough food Ignore: they have died been killed	**(2)**

Question Number	Answer	Mark
2(a)		**(3)**

Question Number	Answer	Mark
3(a)	1. photosynthesis ; 2. roots ; 3. oxygen ;	**(3)**

Question Number	Answer	Additional guidance	Mark
3(b)(i)	provide recycled {nitrates / nutrient} / reduces landfill / less rubbish burnt / less need for artificial fertilisers / less pollution /eq ;	Accept: less transport costs	**(1)**

Question Number	Answer	Additional guidance	Mark
3(b)(ii)	not all paper clean /not enough demand for recycled paper /collection costs too high / recycling costs too high / low grade paper can't be recycled / paper can't be recycled many times (about 5) (as fibres become too short)		**(1)**

Question Number	Answer	Additional guidance	Mark
4		ticks or Y for yes X or N for no **Do not** accept blank for no	**(3)**

	aerobic respiration	**anaerobic respiration**
provides energy	yes	yes
uses oxygen	yes	no
uses glucose	yes	yes
can cause cramp	no	yes

One mark for each correct row

Question Number	Answer	Additional guidance	Mark
5(a)	152 to 196 (cm) / 44 (cm) ;		**(1)**

Question Number	Answer	Additional guidance	Mark
5(b)	Any **two** from: 1. genes / alleles / genetic information ; 2. nutrition ; 3. (growth) hormones ;	 Accept: amount of food Accept: environment	 **(2)**

Question Number	Answer	Acceptable answers	Reject	Mark
5(c)	Mitosis ;	phonetic spellings of mitosis	meiosis	**(1)**

Question Number	Answer	Additional guidance	Mark
6(a)	Any **two** from: 1. they both rise overall ; 2. the number of cases of skin cancer in females is (always) greater than males / ORA ; 3. they rise and fall in similar/same way ; 4. credit any one correct comment on part of graph / correct ref to numbers comparing male / female ; they both peak in 1987 / 1987 to 1988 gap between males and females less towards the end / from 1997 to 1999	 Accept: male and female lines both rise/ both show positive correlation Accept: the female line is (always) greater / higher than the male line Accept: identical	**(2)**

Question Number	Answer	Additional guidance	Mark
6(b)	(Amount of / type of) lichens / (Number of) peppered moth / (Number of cases of) asthma / other named indicators of air pollution ;	 Accept melanic /normal forms of moth Accept: lung cancer Reject water pollution	**(1)**

Question Number	Answer	Acceptable answers	Mark
7(a)	Any **two** from: 1. fix nitrogen / nitrogen fixing bacteria / rhizobium; 2. nitrogen from air / soil ; 3. to make ammonium ions / nitrate (ions) ; 4. (used by plant) to make proteins / DNA ;	 Reject: nitrifying / denitrifying (bacteria) Accept: use / absorb nitrogen Accept: ammonia Ignore refs to absorbing nitrates Ignore refs to absorbing water etc	**(2)**

Question Number	Answer	Additional guidance	Mark
7(b)	Any **two** from: 1. Plants decompose / decomposing bacteria /decomposers (decompose / decay leaves) ; 2. (proteins are changed into) ammonia ; 3. into nitrite (ions); 4. into nitrate (ions); 5. by nitrifying bacteria/named nitrifying bacteria ; 6. Credit points in nitrogen cycle beyond this e.g. nitrate ions are made (MP4) which may be changed back to nitrogen again by denitrifying bacteria ;	 Accept: fungi for bacteria here	**(2)**

Question Number	Answer	Additional guidance	Mark
7(c)	Any **three** from: 1. nitrate (ions) build up / eutrophication ; 2. algal bloom ; 3. (blocks out sunlight so)less photosynthesis ; 4. algae/plants decompose/rot ; 5. (bacteria cause) oxygen depletion /oxygen levels decrease / oxygen concentration goes down 6. (low oxygen levels cause) biodiversity decreases;	Deduct one mark if significantly out of sequence Accept: descriptions – e.g. algae grow very fast / algae grows right over surface of water Ignore: plants die Accept: no oxygen Accept: fish die Accept idea that a small increase in eutrophication can initially increase biodiversity	**(3)**

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Mark Scheme Summer 2009

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GCSE 360Science

Science (2101)
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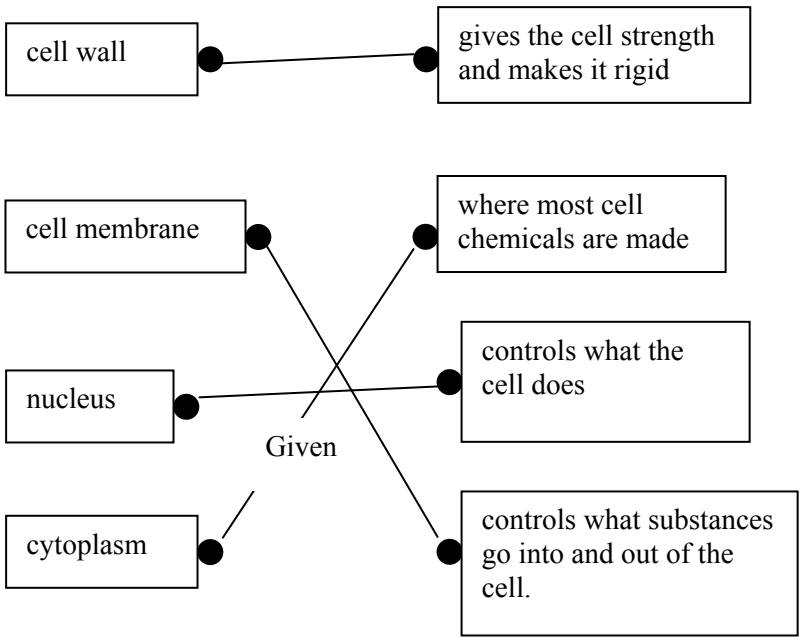
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Additional Science 5016F/1F
Biology 5028F/1F
B2 Mark Scheme

Question Number	Answer	Mark
1(a)	chloroplast	**(1)**

Question Number	Answer	Mark
1(b)	 1 mark for each correct line. If two lines start from one 'part of cell' box award no mark for that box;;	**(3)**

Question Number	Answer	Mark
2	1. faster ; 2. oxygen ; 3. red ;	**(3)**

Question Number	Answer	Mark
3(a)	1. (as the distance from the sea increases) the number of **types/species** of plants increase ; 2. Stays (roughly) constant number of species from 20m / (after 20m) the number of species goes down then up / decreases at 25m then increases again ;	**(2)**

Question Number	Answer	Mark
3(b)	less wave action /out of reach of tides / less salt / less spray; more humus; soil warmer; more soil / less sandy; more water; more minerals / nutrients / more fertile; soil more stable / less wind; ORA (e.g. less plants near sea as too salty / salt damages plants / more wave action / not enough minerals)	**(1)**

Question Number	Answer	Mark
4(a)	respiration ;	**(1)**

Question Number	Answer	Mark
4(b)	**Two of:** Increase plant mass / number / more plants / more trees ; Increase light intensity / turn more lights on ; Increase day length ; Increase temperature ; Increase photosynthesis ; Decrease animal / microbial biomass / number / fewer animals / less people;	**(2)**

Question Number	Answer	Mark
4(c)	fungi / named decomposing fungi / mould /bacteria / named decomposing bacteria / microorganisms / microbes ;	**(1)**

Question Number	Answer	Additional guidance	Mark
5(a)	water ;	hops / barley / malt;	**(1)**

Question Number	Answer	Additional guidance	Mark
5(b)	fermentation ;	(Aerobic) respiration ;	**(1)**

Question Number	Answer	Mark
5(c)	**Two of:** fast growth; climate independent / can be produced anywhere in the world; easily handled; not sentient OWTTE re rights; (waste products) can be sold / used / reused;	**(2)**

Question Number	Answer	Mark
5(d)(i)	more (yeast) is produced than is needed by the brewery / they only need the alcohol not the yeast / yeast is not needed in the beer / because some yeast is left over after the process / yeast is not used in the final product / yeast is not needed and left over	**(1)**

Question Number	Answer	Additional guidance	Mark
5(d)(ii)	in brewing other alcohol fermentation / baking / bread / marmite / brewers yeast / animal feed / (human) food / fertiliser;	Accept: to make vitamin supplements / tablets; to supply / treat people with vitamin B deficiency / low levels of vitamin B; Ignore: source of vitamin B (in stem of question)	**(1)**

Question Number	Answer	Additional guidance	Mark
6(a)	(sulphur dioxide emissions) fall / go down/decrease / show negative correlation;	references to variations e.g. goes up in 1978/1979 Accept: gradual/steady decrease	**(1)**

Question Number	Answer	Additional guidance	Mark
6(b)	burning fossil fuels / burning named fossil fuel e.g. burn coal / gas fired power station ;	Ignore just factories /just power stations (could be nuclear) /just cars Accept compost heaps / car exhaust / driving cars / burning sulphur Reject deforestation	**(1)**

Question Number	Answer	Additional guidance	Mark
6(c)	**One from:** 1. Dissolves in /reacts with/ combines with/in rain / water (in the air) / moisture (in the air); 2. correct chemical details e.g. makes sulphuric acid; **Two from:** 3. reacts with minerals in soil so plants cannot use them ; 4. decreases pH of lakes /rivers / makes lakes /rivers acidic; 5. bad affect on / kills organisms in lakes / rivers ; 6. reduces biodiversity ; 7. removes cuticles from leaves /damages leaves / kills plants / trees; 8. corrosion of buildings / statues / limestone / marble / chalk / calcium carbonate / eq ; 9. MP6 makes CO_2 increases global warming;	Ignore: mixes / trapped / absorbed / contaminates the rain. Accept: clouds for rain Reject: increases pH Ignore: affects pH Accept: correct chemical / biological details of effects e.g. reduces mucus layer of fish /fish gills less able to absorb oxygen; Ignore: pollution Accept: dissolves Ignore: erodes / wears away / damages. Ignore other stones. Ignore: damages skin / cars	**(1)** **(2)** **maximum (3)**

Question Number	Answer	Additional guidance	Mark
7(a)	(External source of) fertilisers (e.g. runoff from farmland) / sewage /animal waste / tap water / decay;	Ignore: eutrophication	**(1)**

Question Number	Answer	Additional guidance	Mark
7(b)	**Two from:** 1. reduces light ; 2. so less/no photosynthesis / less glucose made; 3. plants die / kills plants / less / no growth;	Ignore: less oxygen, make food	**(2)**

Question Number	Answer	Additional guidance	Mark
7(c)	**Two from:** 1. Increase in numbers of microorganisms /bacteria / fungi / increase in amount of decay; 2. using/reducing oxygen (content of water); 3. (this causes)animals to die/move away to another area;	Accept: references to streams and rivers even though pond in question	**(2)**

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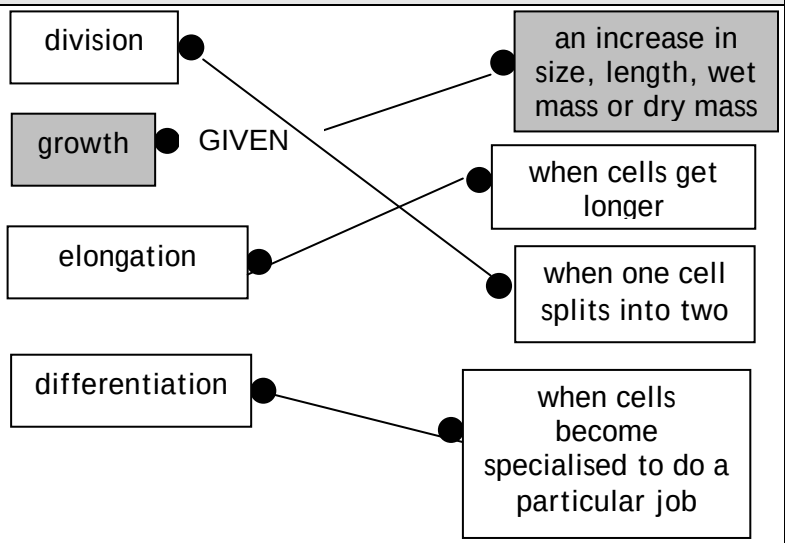
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5016F / 5028F / 1F (B2) Mark Scheme

Question Number	Answer	Mark
1(a)(i)	A – nucleus; B – cytoplasm;	**(2)**

Question Number	Answer	Mark
1(a)(ii)	A;	**(1)**

Question Number	Answer	Mark
1(b)	wall;	**(1)**

Question Number	Answer	Mark
2	 Note: 1mark for each correct line.	**(3)**

Question Number	Answer	Mark
3(a)	oxygen /O_2 ; Reject O2/O^2	**(1)**

Question Number	Answer	Mark
3(b)	diffusion ; higher than ;	**(2)**

Question Number	Answer	Mark
3(c)(i)	anaerobic (respiration) ;	**(1)**

Question Number	Answer	Mark
3(c)(ii)	(build up) of lactic acid/cause cramp/ accept oxygen debt ;	**(1)**

Question Number	Answer	Mark
4(a)	14 ; 18 and 6 ;	**(2)**

Question Number	Answer	Mark
4(b)	**Two of:** 1. number of lichens increases ; 2. number of types of lichens increases and then stays roughly constant/ accept there are more different shapes and colours up to 50/75 km onwards; 3. accept any correct manipulation of figures; 4. accept 1 correct statement describing actual lichens e.g. the clear oval lichens are only found less than 100km from the power station;	**(2)**

Question Number	Answer	Mark
4(c)	same age/same type of rock/ all of one type of named rock/same aspect/same size or height or position/same amount of shelter/(receive) same amount of sunlight /(are) same temperature;	**(1)**

Question Number	Answer	Mark
5(a)	(in Britain there are) 1. predators/more hunting/no natural predators in Australia/named predators; 2. disease (specific to Britain) 3. limited number of burrow sites; 4. less food or water (per hectare compared to Britain); 5. environment differences/temperature e.g. colder winters in Britain;	**(1)**

Question Number	Answer	Mark
5(b)	most food eaten/drought/increased competition OWTTE/disease/overgrazing/increase or introduction of predators/hunters;	**(1)**

Question Number	Answer	Mark
5(c)	**Two from :** 1. competition ; 2. both herbivores/rabbits eat sheep's food/grass; 3. sheep not get enough food ; 4. so lower weight/wool not as thick/less healthy/more likely to catch disease ; 5. accept rabbit diseases can be passed to sheep ;	**(2)**

Question Number	Answer	Mark
6(a)	any time between 06:00 and 18:00 (inclusive)/ accept midday/noon;	**(1)**

Question Number	Answer	Mark
6(b)	any time between 04:00 and 05:00 (inclusive);	**(1)**

Question Number	Answer	Mark
6(c)	all the time/24 hours/00:00 – 00:00/ midnight to midnight/ all day;	**(1)**

Question Number	Answer	Mark
6(d)	**Two from:** 1. line similar shape but lower maximum ; 2. line indicates shorter day time length (must be within day length for summer as shown on the paper) ; 3. line indicates lower rate of respiration ;	**(2)**

Question Number	Answer	Mark
7(a)	unable to compete with human population/loss of habitat/deforestation/climate change/reduced food supply/hunting/poaching/disease/inability to find a mate/population fragmented/low reproduction rate ;	**(1)**

Question Number	Answer	Mark
7(b)	link up the different areas again/plant bamboo/ restrict access/ set up reserves/breeding programmes; (accept reverse answers from 2a)	**(1)**

Question Number	Answer	Mark
7(c)	protection of / careful management of / maintaining the environment / habitat / ecosystem / natural resources; (as environmental conditions change/so species are protected)	**(1)**

Question Number	Answer	Mark
7(d)	to maintain biodiversity/maintain gene pool /prevent extinction ; accept answers related to maintaining food chains/interdependence of organisms	**(1)**