

Name: _____

Year 10 Biology Practice Questions

Date:

Time:

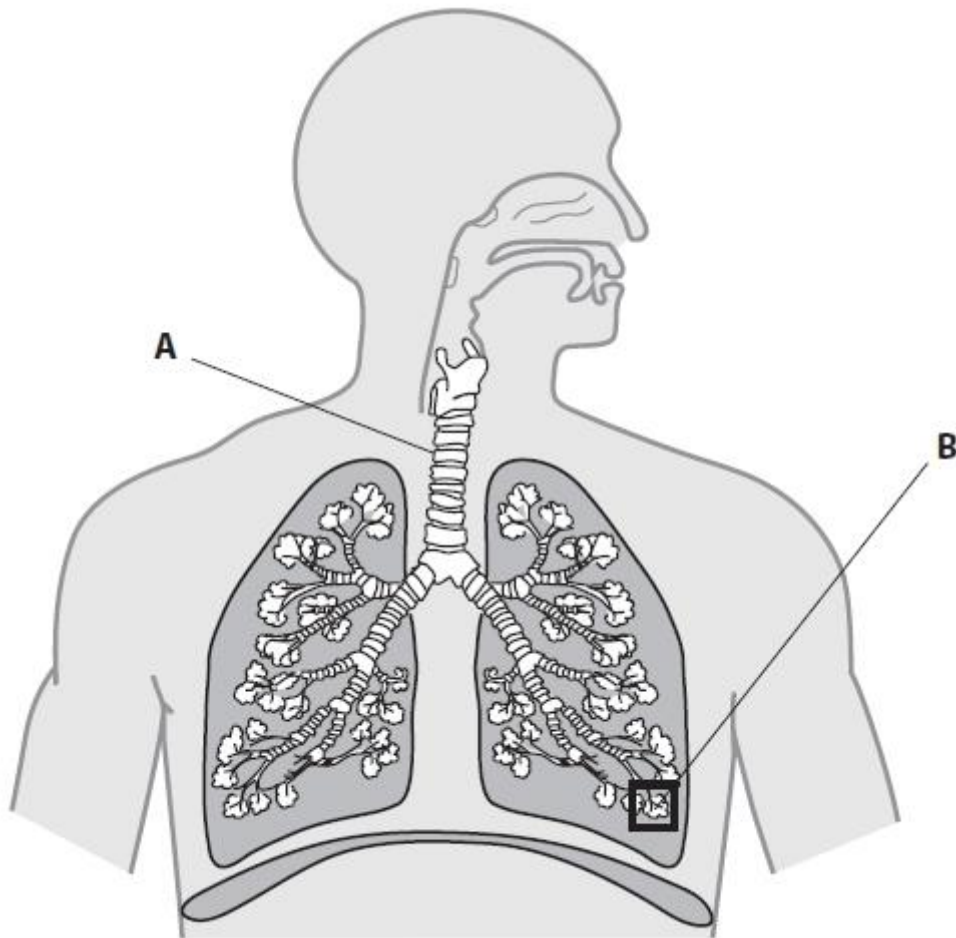
Total marks available: 62

Total marks achieved: _____

Questions

Q1.

The diagram shows some structures in the human breathing system.



(a) Name structures **A** and **B**.

(2)

A

.....

B

.....

(b) The table shows the level of two gases, **X** and **Y**, in blood entering and leaving the lungs during the process of gas exchange.

Gas	Level of gas in cm ³ per 100 cm ³ of blood	
	Blood entering lungs	Blood leaving lungs
X	10.6	19.0
Y	58.0	50.0

(i) Name the two gases.

(2)

gas
X

.....

gas
Y

.....

(ii) How much of gas X enters 100 cm³ of blood, before the blood leaves the lungs?

.....cm³ (1)

(iii) What term is used to describe how the process of gas exchange takes place?
Put a cross in the box to indicate your answer.

(1)

A active transport

B diffusion

C transpiration

D osmosis

(Total for question = 6 marks)

Q2.

Yeast can respire anaerobically and is used to produce beer.

(a) Write the word equation for anaerobic respiration in yeast.

(2)

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(b) Describe a test you could use to identify the gas produced when yeast respire anaerobically.

(2)

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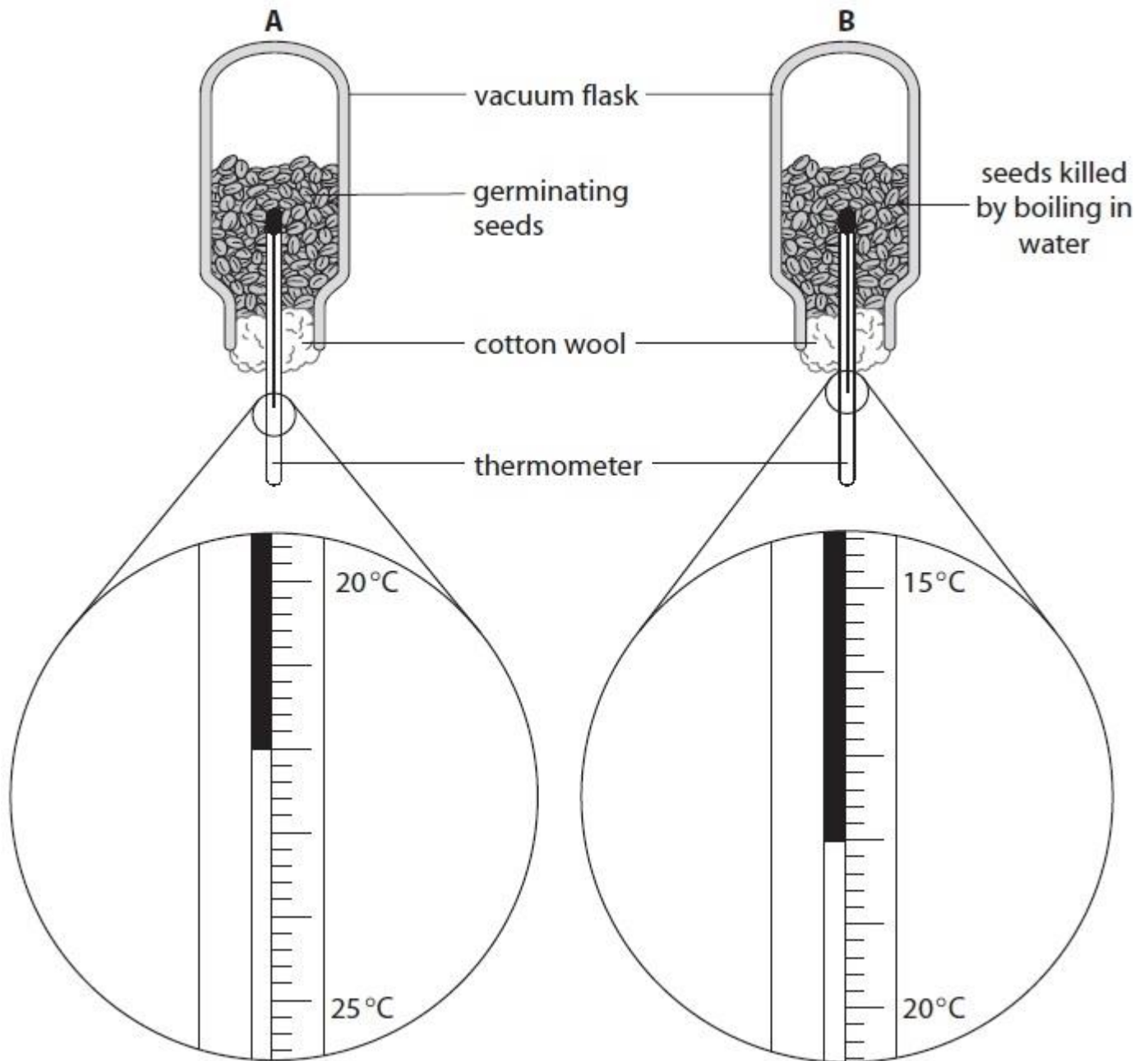
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(Total for question = 4 marks)

Q3.

The diagram shows the apparatus used in a seed germination experiment.



(a) The two samples of seeds started at the same temperature of 18°C.

The diagram shows the temperature reading on each thermometer after 48 hours.

(i) Complete the table to show the temperature of flask A and flask B.

(1)

Temperature in °C	
Flask A	Flask B

(ii) Give a biological explanation for the difference in the temperature of flask A compared to flask B.

(2)

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(b) The seeds in both flasks were washed in disinfectant before being put into the flasks.

Suggest why this was done.

(1)

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(c) The cotton wool kept the thermometers in place and prevented the seeds from falling out of the flasks.

Suggest why cotton wool was used rather than a rubber bung.

(1)

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(d) The seeds used in the experiment were from the same species.

Suggest **one** other variable that needs to be controlled in this experiment.

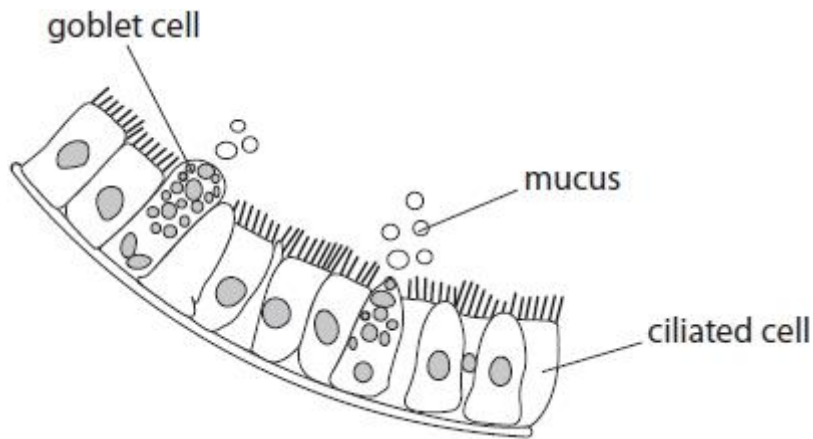
(1)

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(Total for question = 6 marks)

Q4.

The diagram shows some ciliated cells and goblet cells lining the wall of the bronchioles in the lungs.



The small hairs on the surface of the ciliated cells are called cilia.

The goblet cells produce mucus. This mucus is moved by the cilia.

(a) Suggest how ciliated cells and goblet cells protect the lungs from infection.

(2)

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(b) Chemicals in cigarette smoke reduce the movement of the cilia.

Suggest why people who smoke cigarettes often have to cough.

(1)

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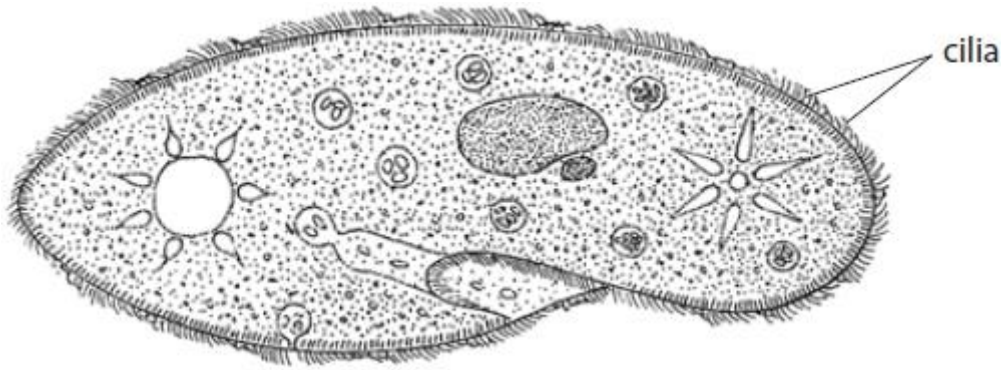
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(c) A scientist investigates the effect of two brands of cigarette, brand A and brand B, on the movement of cilia.

He uses a single-celled organism called *Paramecium* as a model for cilia movement.

The diagram shows a *Paramecium*, which uses cilia on the outside of its body to move through water.

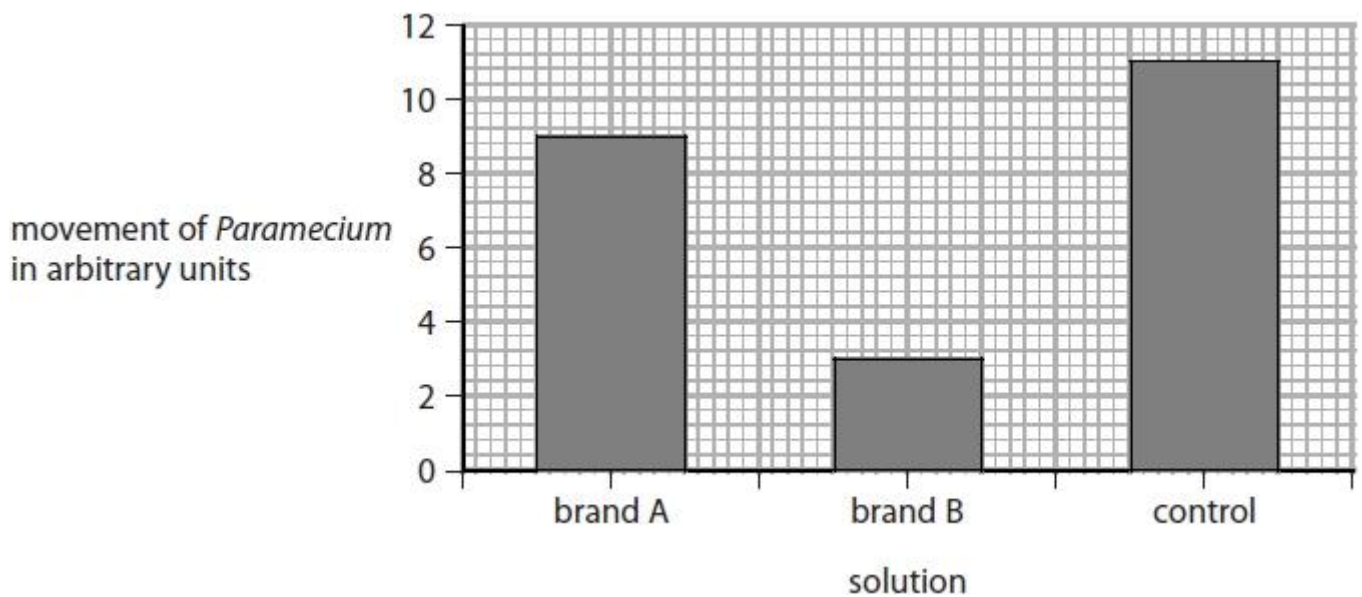


The scientist obtains solutions for each brand of cigarette by placing the tobacco into test tubes of water for 20 minutes.

Chemicals in the tobacco dissolve in the water.

- he places a *Paramecium* in the solution from brand A
- he places a *Paramecium* in the solution from brand B
- he also places a *Paramecium* in a control solution
- he uses a light microscope to observe the movement of the *Paramecium*

The graph shows his results.



(i) Describe the effects of the solutions on the movement of the cilia.

(2)

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(ii) What should the scientist use as a control solution?

(1)

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(iii) The scientist concludes that smoking reduces the movement of cilia in human lungs. Another scientist suggests this may not be a valid conclusion. Give four reasons why this conclusion may not be valid.

(4)

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4

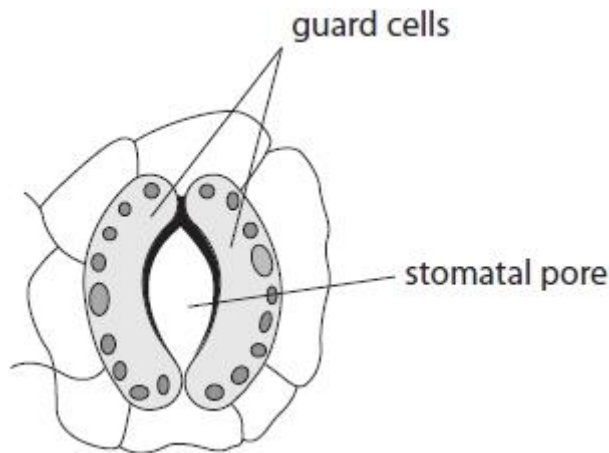
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(Total for question = 10 marks)

Q5.

Stomata are pores found mainly on the underside of leaves.



(a) Explain the role of the stomata in

(i) transport in plants

(2)

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(ii) gas exchange in plants

(2)

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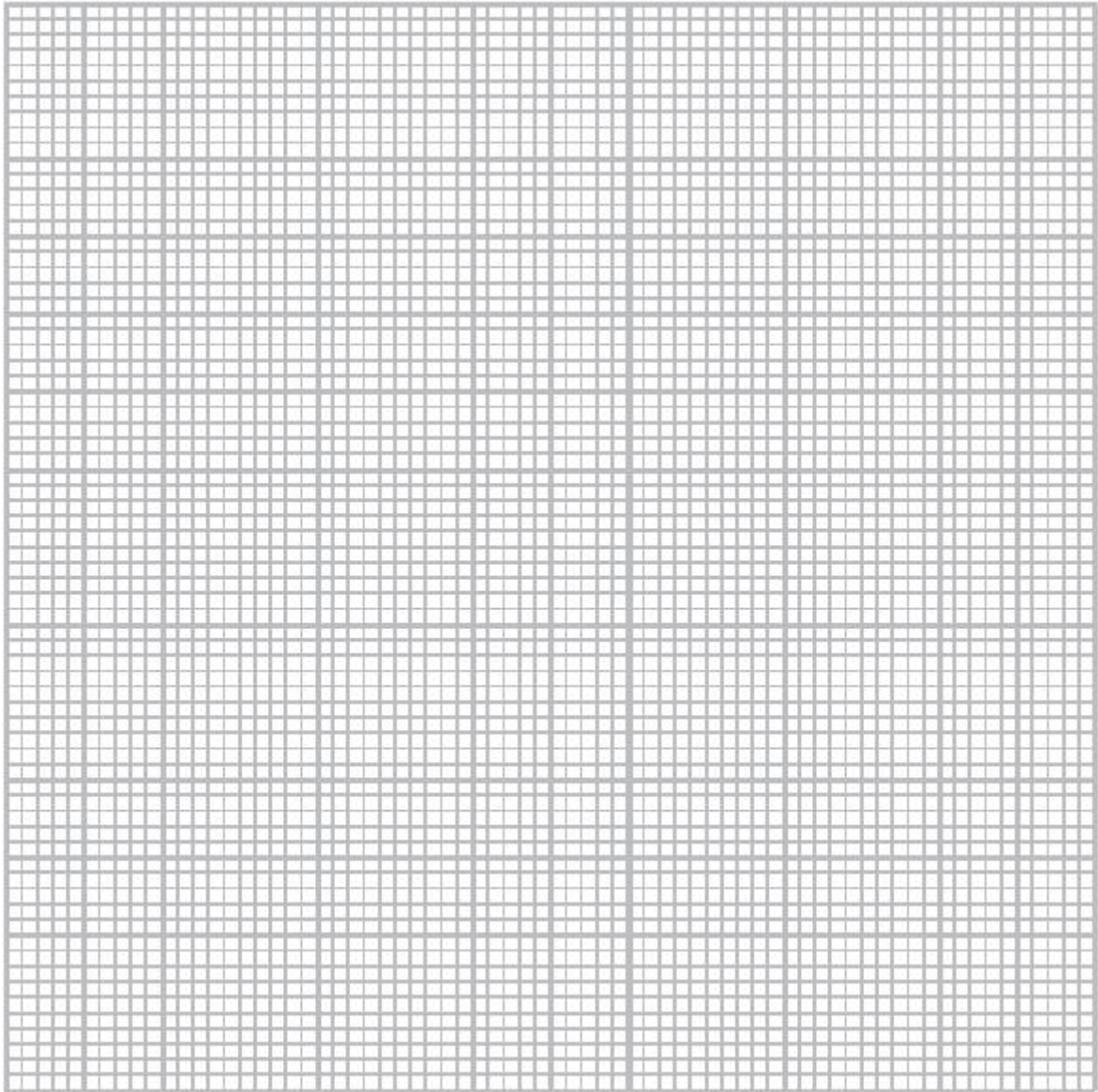
(b) An experiment is carried out to examine the effect of the size of stomatal pores on the rate of transpiration.

The data were collected in still air and in moving air.

Size of stomatal pore in μm	rate of transpiration in $\text{mg} / \text{m}^2 / \text{s}$	
	still air	moving air
0	0	0
4	22	38
8	46	140
12	48	165
16	50	210
20	50	248
24	50	264

(i) Plot a graph to show the effect of stomatal pore size on transpiration rate in still and moving air. Use a ruler to join your points with straight lines.

(6)



(ii) Use the graph to compare the effect of increasing stomatal pore size on transpiration rate in still and moving air.

(2)

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(iii) Explain the effect that moving air has on transpiration rate.

(3)

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(Total for question = 15 marks)

Q6.

(a) A student is given two samples of carbohydrates.

He tests to see if one is glucose and the other one is starch.

Describe the two chemical tests he should use to identify each carbohydrate.

(4)

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(b) Different groups of organism store carbohydrate as different molecules.

Complete the table to show an example from each group of organisms and the molecule they use to store carbohydrate.

(4)

Group	Example from the group	Molecule used to store carbohydrate
animals	cat	
plants	maize	
fungi		

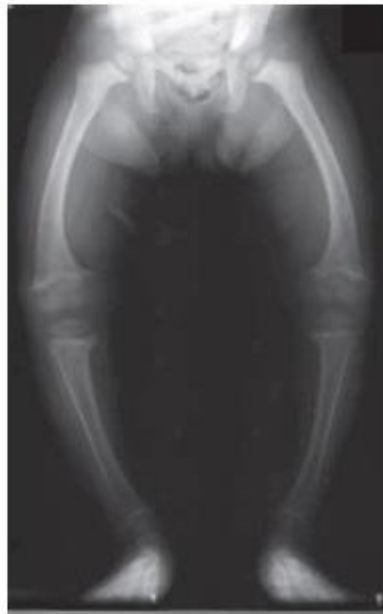
(Total for question = 8 marks)

Q7.

Read the passage below. Use the information in the passage and your own knowledge to answer the questions that follow.

Diet in children

Doctors have warned that lifestyles of children are putting them at an increased risk of rickets. Rickets is caused by a deficiency of vitamin D. It affects the development of leg bones and was common in Britain many years ago. The disease is making a comeback because poor diet and a change in play habits have led to a vitamin D deficiency.



Children are spending more time indoors using computers compared with previous generations who spent time playing outside with their friends. Children who play outside are exposed to sunlight, which boosts vitamin D levels.

In addition, children are not being given cod liver oil – a rich source of the vitamin – in the same amounts as they were 50 years ago. Many parents used to give their children a spoonful of cod liver oil each day to supplement their diet. Two doctors have suggested that the vitamin should be added to milk and other food products to ensure children are getting the recommended amount. In Birmingham, the health authority has been offering pregnant women supplements of the vitamin to reduce the number of cases of rickets in the city.

Another concern is that families are not eating together, so children often choose their own food and prefer to snack on crisps, chocolate and soft drinks high in sugar. This means that the diet of many children is too high in fat and carbohydrates and contains more calories (energy) than the children need. Children are less active than in previous generations, so they don't use as many calories. This lack of activity may lead to other health problems.

(Total for question = 13 marks)

Mark Scheme

Q1.

Question number	Answer	Notes	Marks
(a) (i)	trachea / wind pipe / cartilage; alveoli / alveolus / air sacs;	reject air pockets	2
(b) (i)	X - oxygen / O ₂ ; Y - carbon dioxide / CO ₂ ;		2
(ii)	8.4;		1
(iii)	B diffusion;		1
		Total	6

Q2.

Question number	Answer	Notes	Marks
(a)	(yeast) glucose ONLY; alcohol/ethanol + carbon dioxide (+ energy) ONLY;	Allow if C ₆ H ₁₂ O ₆ Allow C ₂ H ₅ OH and CO ₂	2
(b)	limewater; (clear to) cloudy / (clear to) milky / eq; or hydrogen carbonate indicator; (orange to) yellow / eq;		2 max
			Total 4 marks

Q3.

Question number	Answer	Notes	Marks
(a) (i)	flask A 22 and flask B 18 (both temperatures correct) ;	units not required	1
(ii)	<u>respiration</u> ; heat released / eq;	allow converse ignore energy / warmth	2
(b)	kill bacteria / kill microorganisms / remove bacteria / no bacteria / fewer bacteria / sterilise / eq;	ignore other organisms	1
(c)	oxygen (in) / carbon dioxide (out);	ignore air / gas / gas exchange; reject oxygen out alone / carbon dioxide in alone eg to allow oxygen in and out = 1 allow movement of oxygen / carbon dioxide	1
(d)	mass / number / age / amount (of seeds) / eq;	ignore health / time / outside temperature ignore size	1
		Total	6

Q4.

Question number	Answer	Notes	Marks
(a)	1. (mucus) traps bacteria / pathogens / microbes / microorganisms / prevents bacteria getting into lungs / eq; 2. (cilia/ciliated cells) (re)move bacteria / <u>move</u> bacteria out / eq;	1. Ignore dust 2. Ignore prevent mucus build up / prevent blockage of mucus	2
(b)	remove <u>mucus</u> / prevent <u>mucus</u> build up / clear <u>mucus</u> blockage / cilia cannot remove <u>mucus</u> / eq;		1
(c)(i)	1. reduce movement / lower than control; 2. brand B more than brand A / eq;	Brand B reduces movement more than brand A = 2	2
(ii)	water / no tobacco;		1

(iii)	<p>1. (brand) only 2 brands investigated / other brands not investigated / different brands have different effect / different types of tobacco;</p> <p>2. (smoke versus liquid) humans inhale smoke / extract did not contain smoke / smoke in lungs / only water soluble tobacco compounds investigated / effect could be non-water soluble compound / different solubility of tobacco;</p> <p>3. (repeat) only one <i>Paramecium</i> tested / no repeats / small sample size / data not reliable;</p> <p>4. (organism) <i>Paramecium</i> not human / human not used / lung not used;</p> <p>5. (smoking) frequency of smoking / duration of smoking;</p> <p>6. (variables) no control of temperature;</p> <p>concentration of extract / volume of water in test tubes / amount of tobacco used;</p> <p>pH;</p> <p>light;</p> <p>size of <i>Paramecium</i> / eq;</p>	<p>4. human lungs have bacteria = 1 for ref to lungs</p> <p>6. Allow up to 2 max</p>	4 max
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Q5.

Question number	Answer	Notes	Marks
(a)(i)	1. allows diffusion / evaporation / transpiration / loss of water; 2. creates transpiration pull / transpiration stream / water pulled up / water drawn up; 3. osmosis; 4. water absorbed by root;		Max 2
(ii)	1. oxygen <u>out</u> + carbon dioxide <u>in</u> ; 2. diffusion; 3. photosynthesis	ignore reference to respiration CO ₂ and O ₂ to enter and leave = 1 O ₂ and CO ₂ to enter and leave = 0 CO ₂ and O ₂ to enter or leave = 0	Max 2

(b)(i)	S scale linear and at least half of both axes; L lines straight, neat and through points; A axes correct way round; P points plotted accurately; U units stomatal pore μm and rate of transpiration $\text{mg} / \text{m}^2 / \text{s}$; K key still air and moving air;	bar chart no L and no P non-linear scale no P if no plot for 0,0 no P but allow L P allow within one square	6
(ii)	1. transpiration increases in both / eq; 2. levels off in still air / continues to increase in moving air / more increase in moving air / eq;		2
(iii)	1. takes water away / blows water away / less water outside / eq; 2. increases / maintains gradient; 3. (increases) diffusion;	maintains diffusion gradient = 2 marks	3

(Total for question = 15 marks)

Q6.

Question number	Answer	Notes	Marks												
(a)	1. iodine; 2. blue / black / blue black = starch; 3. Benedict's / eq; 4. heat / use water bath / eq; 5. red / orange / yellow / green = glucose;	if iodine for glucose goes blue black = 0 only award Mp1 and Mp3 if linked to correct test heat must be linked to Benedict's	4 max												
(b)	<table border="1"><thead><tr><th>Group</th><th>Example from the group</th><th>Molecule used to store carbohydrate</th></tr></thead><tbody><tr><td>animals</td><td>(cat)</td><td>glycogen;</td></tr><tr><td>plants</td><td>(maize)</td><td>starch / sucrose;</td></tr><tr><td>fungi</td><td>mucor / yeast / mushroom / mould / eq;</td><td>glycogen;</td></tr></tbody></table>	Group	Example from the group	Molecule used to store carbohydrate	animals	(cat)	glycogen;	plants	(maize)	starch / sucrose;	fungi	mucor / yeast / mushroom / mould / eq;	glycogen;	Ignore in plants sugar / glucose / fructose Allow <i>Fomes formentarius</i> / eq	4
Group	Example from the group	Molecule used to store carbohydrate													
animals	(cat)	glycogen;													
plants	(maize)	starch / sucrose;													
fungi	mucor / yeast / mushroom / mould / eq;	glycogen;													

Total 8 marks

Q7.

Question number	Answer	Notes	Marks
(a)	sun/light makes <u>vitamin D</u> ;		1
(b)	children still growing (bones) / developing (bones) / eq;	allow converse - adult bones fully developed ignore ref to cod liver oil / time spent indoors	1
(c)	fat / lipid; carbohydrate; protein; fibre / roughage; water; minerals / salts / ions;	only accept generic names, so iron = 0, glucose = 0 if list ignore non generic names	Max 3
(d)	1. idea of <u>high</u> in sugar / fat / carbohydrate / energy / calories 2. not used / not burnt / not needed / eq;	marks are for idea of energy balance and not consequence	2
(e)	1. obesity / overweight / joint damage; 2. diabetes; 3. heart disease / heart attack / angina / cardiac arrest / eq; 4. blocks/narrows/build up <u>arteries</u> / blocks blood vessels / high blood pressure; 5. stroke;	ignore vein / capillary	Max 2
(f)	1. weigh crisp / mass of crisp; 2. burn crisp / eq; 3. burnt completely / eq; 4. heat water / hold (burning crisp) under tube / hold (burning crisp) under water / calorimeter / eq; 5. volume of water / mass of water; 6. measure temperature before and after / temperature rise / temperature increase / change in temperature / eq;	allow marks if clear in formula allow heat water if implicit	Max 4

Total 13 marks

