



# AQA Biology Paper 1

Higher

Combined Science

Predicted Paper A

Name.....

Date.....

1 hour 15 minutes allowed

Similar to your real exam each question in this gets harder towards the end of each question, so if you find you can do the last part of a certain question, try the next question, they all start off easier then get harder.

Grade boundaries

These are VERY rough guesses! Getting an 8 or 9 on here does not guarantee you the same mark in the exam

- 9            55
- 8            45
- 7            35
- 6            25
- 5            15



## Exam Analysis

Question	Marks available	Marks gained	Topic	What do you need to do to improve ...	Bits to help if you don't understand ...
1	12		Cells		<a href="https://youtu.be/aM3ZfC1K6W8">https://youtu.be/aM3ZfC1K6W8</a>
2	12		Digestive system		
3	9		Circulatory system		
4	20		Pathogens		
5	17		Plants		
Total	70				



Question 1

a) What is the function of mitochondria?

[1 mark]

Circle **one** answer only

A	To carry out photosynthesis
B	Protein synthesis
C	To carry out respiration
D	Cell control centre

b) Roots are cells are specialised to perform, a particular function, describe that function and how the cell is specially adapted for this function. [3 marks]

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c) What is a stem cell?

[1 mark]

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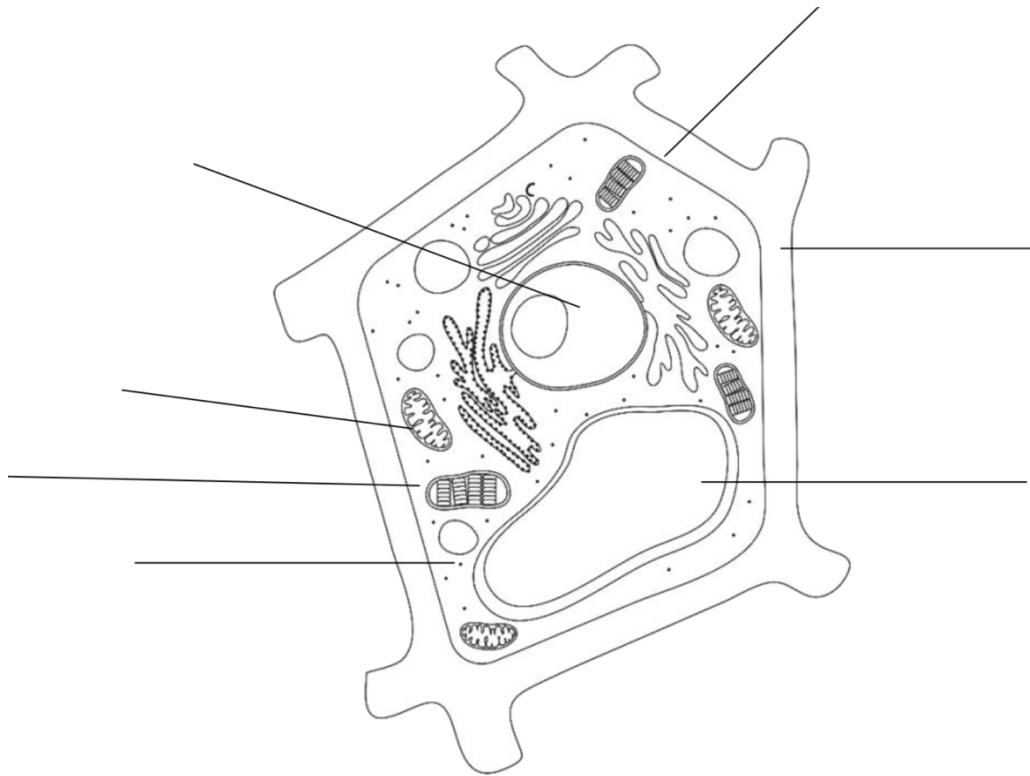
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d) Label this diagram of a cell

[7 marks]





### Question 2

The digestive system is made up of a large number of different organs, that work together to perform a function, within the digestive system enzymes work to break down foods.

- a) One of the enzymes in the digestive system is amylase, amylase breaks down carbohydrates, what does it break down carbohydrates into? [1 mark]

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- b) Amylase is produced in the mouth, this is only one of the ways the mouth breaks down food, give another way the mouth breaks down food. [1 mark]

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- c) Describe the mechanism by which amylase, breaks a down carbohydrate. [6 marks]

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d) Bile is not an enzyme, but is also important for digestion, describe the job of bile. You should include where is it produced and stored. [4 marks]

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Question 3

a) The circulatory system is responsible for trafficking gases and nutrients around the body, look at the below table and identify the row with the correct set of properties.

Circle **one** answer only

[1 mark]

A	Red blood cells carry carbon dioxide	White blood cells engulf invading bacteria	Plasma transports dissolved substances
B	Serum transports dissolved substances	Red blood cells carry oxygen	Platelets help blood clot
C	Platelets help blood clot	White blood cells engulf invading bacteria	Plasma transports dissolved substances
D	White blood cells engulf invading bacteria	Serum transports dissolved substances	Red blood cells carry oxygen

b) How are red blood cells adapted for their function?

[2 marks]

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c) The heart has a vitally important job in pumping blood around the body. Compare the left side of the heart to the right side of the heart. [6 marks]

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Question 5

a) Plants take energy from the sun and use it to create food, name this process and give the word equation for this process. [3 marks]

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b) This process is affect by temperature, explain how temperature can have an effect on the function of plants. [3 marks]

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c) The optimal temperature for this plant in 37°C with a range of 4°C. Use the data below to say how many hours the plant is at optimal temperature. [2 marks]

Time (24hr)	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Temperature (°C)	32	32	33	33	34	34	35	36	37	38	39	37	37	37	36	36	34	33

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## Answers

Question	Answer	Guidance
1a	C	One answer only must be circled
1b	<ul style="list-style-type: none"><li>-thin walls to allow for diffusion</li><li>-wide growth to roots plant into the ground</li><li>-large surface area to absorb lots of water</li></ul>	One mark for each bullet point.
1c	-a cell that has the ability to differentiate into any other type of cell	
1d	Clockwise from top... <ul style="list-style-type: none"><li>-cell membrane</li><li>-Cell wall</li><li>-vacuole</li><li>-ribosome</li><li>-chloroplast</li><li>-mitochondria</li><li>-nucleus</li></ul>	One mark for each bullet point.
2a	sugars	1 mark
2b	Teeth-mechanical digestion	1 mark
2c	Examples of scientific points that can be made in the answer <ul style="list-style-type: none"><li>-lock and key mechanism</li></ul> Enzyme is a biological catalyst <ul style="list-style-type: none"><li>-enzyme active site will only fit one substrate</li><li>-substrate fits into the active site and the enzyme breaks in down into the products</li><li>-products are released</li><li>-enzyme can be used again for another reactions</li><li>-enzymes no not get used up in the reaction</li></ul>	1-2 marks This answer will have some valid points but will lack structure and not be complete 3-4 marks The majority of the points are valid and correct but the answer is lacking scientific clarity 5-6 marks This is a fluid answer, all points mentioned are correct and relevant, and the SPG is almost flawless
2d	<ul style="list-style-type: none"><li>-neutralises stomach acid</li><li>-emulsifies fats</li><li>-made in liver</li><li>-stored in gallbladder</li></ul>	One mark for each bullet point.
3a	C	One answer only, if more than one answer circles award no marks
3b	<ul style="list-style-type: none"><li>-no nucleus/biconcave disc</li><li>-to allow more space to carry oxygen</li></ul>	One mark for each bullet point.
3c	Similarities	1-2 marks



	<ul style="list-style-type: none"> <li>-both have atria at the top</li> <li>-both have ventricles at the bottom</li> <li>-both have valves to ensure blood flows in one direction</li> </ul> <p>Differences</p> <ul style="list-style-type: none"> <li>-left side have larger muscles to pump blood around the rest of the body instead of just to the lungs</li> <li>-vena cava goes into the right atria</li> <li>-Pulmonary vein comes out of the right ventricle</li> <li>-pulmonary artery goes into the left atria</li> <li>-aorta comes out of the left ventricle</li> </ul>	<p>This answer will have some valid points but will lack structure and not be complete 3-4 marks</p> <p>The majority of the points are valid and correct but the answer is lacking scientific clarity 5-6 marks</p> <p>This is a fluid answer, all points mentioned are correct and relevant, and the SPG is almost flawless</p>
4a	toxins	1 mark
4b	<ul style="list-style-type: none"> <li>-virus DNA is injected into a cell</li> <li>-virus DNA replicates inside a host cell</li> <li>-cell explodes releasing new viruses</li> </ul>	1 mark for each bullet point
4c	<ul style="list-style-type: none"> <li>-more recognition of the disease</li> <li>-better drugs</li> </ul>	1 mark for each bullet point
4d	<ul style="list-style-type: none"> <li>-small amount of dead or inactive pathogen given</li> <li>-allows white blood cells ...</li> <li>-.....to develop antibodies to pathogen</li> <li>-next time a person is infected with the pathogen the immune already has antibodies</li> <li>-immune system can respond faster and person shouldn't get ill</li> </ul>	1 mark for each bullet point
4e	Kill bacteria	1 mark
4f	<ul style="list-style-type: none"> <li>-complete any course of antibiotics given by the doctor</li> <li>-don't ask doctor for antibiotics</li> <li>-Antibiotics should not be prescribed for viral infections</li> <li>-stop giving animals antibiotics in food</li> </ul>	1 mark for each bullet point
4g	$2 \times 1.5 \times 0.5 = 1.5$ $\mu\text{m}^3$	1 mark for answer 1 mark for unit
4h	<p>(Magnification = measured size/actual size)</p> <p>Actual size = measured size / magnification</p> <p>Actual size = <math>400 / 120 = 3\mu\text{m}</math></p>	1 mark for equation 1 mark for number AND unit
5a	<ul style="list-style-type: none"> <li>-photosynthesis</li> <li>-carbon dioxide + water → glucose + oxygen (no marks if light is on left hand side of arrow)</li> <li>- sunlight required. Can be shown above the arrow, but not as a reactant.</li> </ul>	1 mark for each bullet point



5b	<ul style="list-style-type: none"><li>-plants work best at optimal temperature</li><li>-too low enzymes don't have enough energy</li><li>-too high enzymes become denatured</li></ul>	1 mark for each bullet point
5c	10 hours	2 marks
5d	<p>Method must have logical steps and work</p> <ul style="list-style-type: none"><li>-equipment; beaker, funnel, plasticine, measuring cylinder, 10cm section of pond weed, lamp, meter rule, timer</li><li>-place pond weed in beaker of water</li><li>-place the funnel and a filled measuring cylinder over the top of the pondweed</li><li>-use the meter rule to place the lamp a set distance away</li><li>-use the stop watch to record a set time</li><li>-count bubble or volume of gas given off in that set time</li><li>-move the lamp to a different distance</li><li>-repeat counting bubbles or volume of gas</li></ul>	<p>1-2 marks This answer will have some valid points but will lack structure and not be complete</p> <p>3-4 marks The majority of the points are valid and correct but the answer is lacking scientific clarity</p> <p>5-6 marks This is a fluid answer, all points mentioned are correct and relevant, and the SPG is almost flawless</p>
5e	<ul style="list-style-type: none"><li>-fermentation</li><li>-sugar → ethanol + carbon dioxide</li></ul>	<p>1 mark for process</p> <p>1 mark for left hand side</p> <p>1 mark for right hand side</p>