AQA Style

GCSE

COMBINED SCIENCE

F

Foundation Tier Biology Paper 1

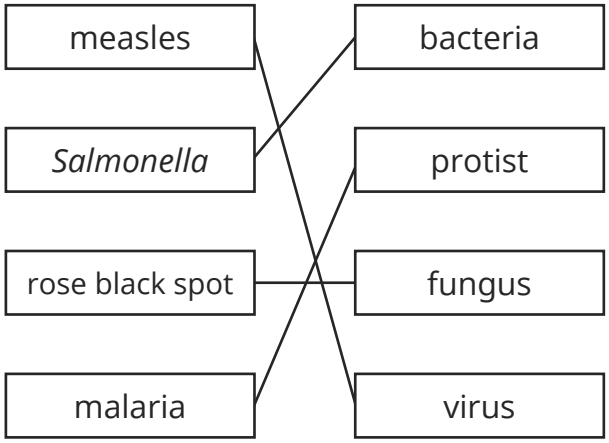
Mark Scheme

BEYOND SCIENCE

Question 1

Question	Answers	Extra information	Mark
01.1	cell membrane	If more than one box is ticked, award no marks.	1
01.2	mitochondria	If more than one box is ticked, award no marks.	1
01.3	nucleus		1
01.4	Any **one** from: • lots of dendrites/branches to make connections to other cells • long axon to carry nerve impulses from one location to another • fatty (myelin) sheath to insulate the nerve cell/speed up nerve impulses		1
Total			**4**

Question 2

Question	Answers	Extra information	Mark
02.1		**1** mark for each correct line. If more than 1 line is drawn from 1 box, award no marks for that box.	4
02.2	Any **one** from: • by air • by direct contact • by water		1
02.3	mucus trachea/bronchi kill/destroy	Answers in this order only.	1 1 1
Total			**8**

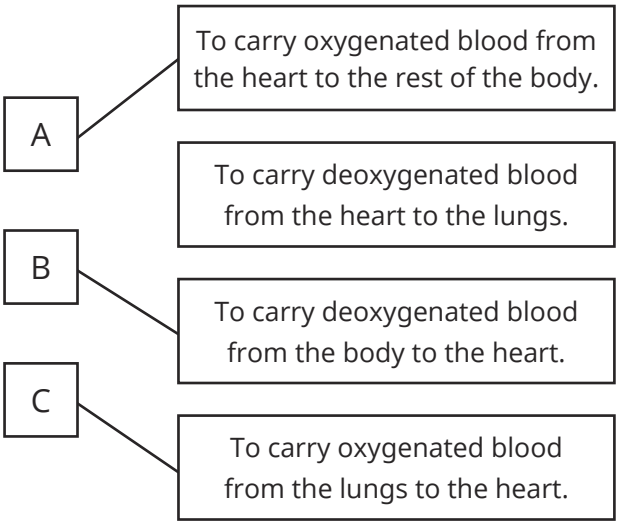
Question 3

Question	Answers	Extra information	Mark
03.1	lipase carbohydrates amino acids	Answers in this order only.	1 1 1
03.2	add Biuret reagent turns lilac/purple	Allow add sodium hydroxide **and** copper sulfate.	1 1
03.3	salivary glands pancreas	Answers in either order.	1 1
03.4	liver		1
03.5	bile emulsifies fat/forms small fat droplets which increases the surface area for digestion **or** bile is alkaline so it neutralises stomach acid (to create optimum pH for enzymes)	Allow **1** mark for a correct function of bile. For **2** marks, students must give both the function of bile **and** an explanation of how it increases the rate of fat digestion.	2
Total			**10**

Question 4

Question	Answers	Extra information	Mark
04.1	130 (beats per minute)		1
04.2	4 (minutes)		1
04.3	Any **four** from: • to supply more blood to muscles • so more oxygen/glucose is supplied muscle cells (allow oxygenated blood) • for (aerobic) respiration • so more energy is released/transferred • for muscle contraction	Allow correct symbols for oxygen and glucose. Allow more carbon dioxide/CO_2 is removed from the muscle cells. Do **not** accept anaerobic respiration. Do **not** accept produced/created/made. Idea of more/increased must be mentioned at least once for full marks. If no other marks are awarded, allow **1** mark for reference to blood/oxygen/glucose reaching muscle cells.	4
04.4	lactic acid builds up due to anaerobic respiration	 Allow correct equation for anaerobic respiration.	1 1
Total			**8**

Question 5

Question	Answers	Extra information	Mark
05.1	aorta		1
05.2		**1** mark for each correct line. If more than 1 line is drawn from 1 box, award no marks for that box.	3
05.3	layers of fat build up inside the coronary arteries arteries are narrowed blood flow is reduced the amount of oxygen reaching the heart muscle is reduced	Allow O_2 for oxygen.	1 1 1 1
05.4	use statins to reduce blood cholesterol/prevent the build-up of fatty deposits **or** insert a stent to keep the arteries open	Allow **1** mark for a correct treatment. For **2** marks, students must give both the treatment **and** an explanation of how it works.	2
Total			**10**

Question 6

Question	Answers	Extra information	Mark
06.1	to remove excess solution/liquid/water from the carrot sticks		1
06.2	Any **two** from: • cut carrots into sticks of equal size/ length • use a wider range of concentrations of sugar solution • use smaller intervals of concentration of sugar solution • control volume of sugar solution • leave the carrots in the sugar solutions for a longer time • repeat the investigation		2
06.3	$\frac{0.8}{16.0} \times 100$ = (+) 5 (%)	An answer of (+) 5 (%) with no working scores **2** marks. Allow **1** mark for evidence of $\frac{0.8}{16.0}$.	1 1
06.4	the carrot sticks have different masses at the start percentage change allows results to be compared		1 1
06.5	all points plotted correctly straight line of best fit ignoring the point at (5.0, -20)	Allow ± ½ a small square. Allow error carried forward from **06.3**. Allow **1** mark for 4 or 5 points plotted correctly. Allow correct line of best fit for incorrectly plotted points.	2 1

06.6	water is lost from the carrot sticks by osmosis from the dilute solution inside the carrot to the concentrated solution in the test tube	 Allow high water concentration inside the carrot to low water concentration in the test tube.	1 1 1
Total			**13**

Question 7

Question	Answers	Mark
07.	**Level 3:** There is a clear and detailed method which would produce valid results. The method must include at least one control variable **and** a description of what is being measured.	**5-6**
	Level 2: Most of the method is described with only some missing detail. The method must include at least one control variable **or** a description of what is being measured.	**3-4**
	Level 1: There are simple statements that give a brief description of parts of the method.	**1-2**
	No relevant content.	**0**
	Indicative content: • Description of how the apparatus would be used. • Reference to the control of temperature using a water bath or electric heater. • Use of a measuring cylinder or syringe to measure the volume of starch solution and amylase solution. • Use of timer to record equal intervals between samples. • Use of iodine reagent to test for starch, including colour change to blue/black. • Identification of when starch is fully digested, because iodine remains orange/yellow. • Record the time taken for complete digestion by counting the number of wells tested positive for starch. • Repetition at different pH values. • Repetition of investigation, or comparison with other groups, and calculation of a mean.	
Total		**6**

Question 8

Question	Answers	Extra information	Mark
08.1	$\frac{14}{200}$ = 0.07 (mm)	An answer of 0.07 (mm) with no working scores **2** marks.	1 1
08.2	70 (µm)	Allow error carried forward from **08.1.**	1
08.3	left-hand side: water right-hand side: glucose **and** oxygen	 Answers in either order.	1 1
08.4	count the number of bubbles per unit time	 Allow given time e.g. 1 minute.	1 1
08.5	to control the temperature so temperature does not affect the rate of photosynthesis/to prevent enzymes from being denatured by high temperatures		1 1
08.6	(between A and B) increasing the light intensity no longer increases the rate of photosynthesis because another factor is limiting the rate of reaction	 Allow named factor e.g. carbon dioxide concentration/ temperature.	1 1
Total			**11**