# GCSE
# COMBINED SCIENCE: SYNERGY
# 8465/2H

Higher Tier Paper 2 Life and Environmental Sciences

**Mark scheme**

June 2020

Version: 1.0 Final mark scheme

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Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts. Alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

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# Information to Examiners

## 1. General

The mark scheme for each question shows:

- the marks available for each part of the question
- the total marks available for the question
- the typical answer or answers which are expected
- extra information to help the Examiner make his or her judgement
- the Assessment Objectives, level of demand and specification content that each question is intended to cover.

The extra information is aligned to the appropriate answer in the left-hand part of the mark scheme and should only be applied to that item in the mark scheme.

At the beginning of a part of a question a reminder may be given, for example: where consequential marking needs to be considered in a calculation; or the answer may be on the diagram or at a different place on the script.

In general the right-hand side of the mark scheme is there to provide those extra details which confuse the main part of the mark scheme yet may be helpful in ensuring that marking is straightforward and consistent.

## 2. Emboldening and underlining

**2.1** In a list of acceptable answers where more than one mark is available 'any **two** from' is used, with the number of marks emboldened. Each of the following bullet points is a potential mark.

**2.2** A bold **and** is used to indicate that both parts of the answer are required to award the mark.

**2.3** Alternative answers acceptable for a mark are indicated by the use of **or**. Different terms in the mark scheme are shown by a / ; eg allow smooth / free movement.

**2.4** Any wording that is underlined is essential for the marking point to be awarded.

# 3. Marking points

## 3.1 Marking of lists

This applies to questions requiring a set number of responses, but for which students have provided extra responses. The general principle to be followed in such a situation is that 'right + wrong = wrong'.

Each error / contradiction negates each correct response. So, if the number of error / contradictions equals or exceeds the number of marks available for the question, no marks can be awarded.

However, responses considered to be neutral (indicated as * in example 1) are not penalised.

Example 1: What is the pH of an acidic solution?

**[1 mark]**

| Student | Response | Marks awarded |
|---|---|---|
| 1 | green, 5 | 0 |
| 2 | red*, 5 | 1 |
| 3 | red*, 8 | 0 |

Example 2: Name two planets in the solar system.

**[2 marks]**

| Student | Response | Marks awarded |
|---|---|---|
| 1 | Neptune, Mars, Moon | 1 |
| 2 | Neptune, Sun, Mars, Moon | 0 |

## 3.2 Use of chemical symbols / formulae

If a student writes a chemical symbol / formula instead of a required chemical name, full credit can be given if the symbol / formula is correct and if, in the context of the question, such action is appropriate.

## 3.3 Marking procedure for calculations

Marks should be awarded for each stage of the calculation completed correctly, as students are instructed to show their working. Full marks can, however, be given for a correct numerical answer, without any working shown.

## 3.4 Interpretation of 'it'

Answers using the word 'it' should be given credit only if it is clear that the 'it' refers to the correct subject.

### 3.5 Errors carried forward

Any error in the answers to a structured question should be penalised once only.

Papers should be constructed in such a way that the number of times errors can be carried forward is kept to a minimum. Allowances for errors carried forward are most likely to be restricted to calculation questions and should be shown by the abbreviation ecf in the marking scheme.

### 3.6 Phonetic spelling

The phonetic spelling of correct scientific terminology should be credited **unless** there is a possible confusion with another technical term.

### 3.7 Brackets

(…..) are used to indicate information which is not essential for the mark to be awarded but is included to help the examiner identify the sense of the answer required.

### 3.8 Allow

In the mark scheme additional information, 'allow' is used to indicate creditworthy alternative answers.

### 3.9 Ignore

Ignore is used when the information given is irrelevant to the question or not enough to gain the marking point. Any further correct amplification could gain the marking point.

### 3.10 Do <u>not</u> accept

Do **not** accept means that this is a wrong answer which, even if the correct answer is given as well, will still mean that the mark is not awarded.

## 4. Level of response marking instructions

Extended response questions are marked on level of response mark schemes.

- Level of response mark schemes are broken down into levels, each of which has a descriptor.
- The descriptor for the level shows the average performance for the level.
- There are two marks in each level.

Before you apply the mark scheme to a student's answer, read through the answer and annotate it (as instructed) to show the qualities that are being looked for. You can then apply the mark scheme.

**Step 1: Determine a level**

Start at the lowest level of the mark scheme and use it as a ladder to see whether the answer meets the descriptor for that level. The descriptor for the level indicates the different qualities that might be seen in the student's answer for that level. If it meets the lowest level then go to the next one and decide if it meets this level, and so on, until you have a match between the level descriptor and the answer.

When assigning a level you should look at the overall quality of the answer. Do **not** look to penalise small and specific parts of the answer where the student has not performed quite as well as the rest. If the answer covers different aspects of different levels of the mark scheme you should use a best fit approach for defining the level.

Use the variability of the response to help decide the mark within the level, ie if the response is predominantly level 2 with a small amount of level 3 material it would be placed in level 2 but be awarded a mark near the top of the level because of the level 3 content.

**Step 2: Determine a mark**

Once you have assigned a level you need to decide on the mark. The descriptors on how to allocate marks can help with this.

The exemplar materials used during standardisation will help. There will be an answer in the standardising materials which will correspond with each level of the mark scheme. This answer will have been awarded a mark by the Lead Examiner. You can compare the student's answer with the example to determine if it is the same standard, better or worse than the example. You can then use this to allocate a mark for the answer based on the Lead Examiner's mark on the example.

You may well need to read back through the answer as you apply the mark scheme to clarify points and assure yourself that the level and the mark are appropriate.

Indicative content in the mark scheme is provided as a guide for examiners. It is not intended to be exhaustive and you must credit other valid points. Students do **not** have to cover all of the points mentioned in the indicative content to reach the highest level of the mark scheme.

You should ignore any irrelevant points made. However, full marks can be awarded only if there are no incorrect statements that contradict a correct response.

An answer which contains nothing of relevance to the question must be awarded no marks.

| Question | Answers | Extra information | Mark | AO / Spec. Ref. |
|---|---|---|---|---|
| **01.1** | P | | 1 | AO1 4.1.4.2 |
| **01.2** | R | | 1 | AO1 4.1.4.2 |
| **01.3** | any **one** from:<br>• number of masses<br>• length of string<br>• type of string | allow tension (in the string)<br>allow position of the wooden bridge (after first wave formed) | 1 | AO1 4.1.4.1 RPA 5 |
| **01.4** | any **two** from:<br>• the metre rule is too short<br>• the string is raised up<br>• the string moves | allow the string was longer than the metre rule | 2 | AO3 4.1.4.1 RPA5 |
| **01.5** | any **one** from:<br>• wavelength is inversely proportional to frequency<br>• as frequency increases wavelength decreases | allow frequency is inversely proportional to wavelength<br>allow as wavelength decreases frequency increases | 1 | AO3 4.1.4.1 RPA5 |
| **01.6 view with Table 1** | length of one loop = $\frac{1.50}{5}$<br>wavelength **X** = 0.6 (m) | allow length of one loop = 0.3 (m)<br>allow wavelength = $\frac{1.50}{2.5}$ | 1<br>1 | AO2 4.1.4.1 RPA5 |

| | | | | |
|---|---|---|---|---|
| **01.7** | period = $\frac{1}{30}$ | | 1 | AO2<br>4.1.4.2 |
| | 0.0333 (s) | | 1 | |
| | 0.033 (s) | allow correct rounding to 2 significant figures of incorrectly calculated period. | 1 | |

| | | | |
|---|---|---|---|
| **Total** | | | **11** |

| Question | Answers | Extra information | Mark | AO / Spec. Ref. |
|---|---|---|---|---|
| **02.1** | carbon dioxide (+ water) ⟶ oxygen (+ glucose)<br><br>both gases needed for the mark<br>allow correct formulae words take precedence | | 1 | AO1<br>4.2.2.5 |
| **02.2** | **Level 3:** The method would lead to the production of a valid outcome. The key steps are identified and logically sequenced. | | 5–6 | AO1<br>4.2.2.6<br>RPA10 |
| | **Level 2:** The method would not necessarily lead to a valid outcome. Most steps are identified, but the method is not fully logically sequenced. | | 3–4 | |
| | **Level 1:** The method would not lead to a valid outcome. Some relevant steps are identified, but links are not made clear. | | 1–2 | |
| | **No relevant content** | | 0 | |
| | **Indicative content**<br>• measure the distance between the pondweed and the light source<br>• count the number of bubbles or measure the volume of oxygen / gas produced<br>• (measure oxygen / gas produced) in a set period of time<br>• change the distance between the light source and the pondweed or use a different power lamp<br>• control colour of light<br>• control temperature using a heat screen / water bath<br>• use the same pondweed<br>• use the same length / size of pondweed<br>• control carbon dioxide supply<br>• idea of allowing time for pondweed to equilibrate<br>• repeat each test two or more times<br>• calculate a mean<br><br>For Level 3 the method described must include;<br>• how the light intensity is changed<br>• the measurements needed to determine the rate of photosynthesis<br>• at least one control variable | | | |

| | | | | |
|---|---|---|---|---|
| **02.3** | $1.65 \times 10^6 = 1\ 650\ 000$<br><br>(1 650 000 + 200 000)<br>= 1 850 000<br><br>**or**<br><br>$200\ 000 = 2.0 \times 10^5$ (1)<br><br>$(1.65 \times 10^6) + (2.0 \times 10^5)$<br>$= 1.85 \times 10^6$ (1) | | 1<br><br>1 | AO2<br>4.2.2.6 |
| **02.4** | all points plotted correctly<br><br>correct line of best fit | allow ± half a square<br>allow **1** mark for 3 or 4 correct plots<br>ignore extrapolation | 2<br><br>1 | AO2<br>4.2.2.6 |
| **02.5** | increasing light intensity increases the number of (extra algal) cells<br><br>the increase in the number of (extra algal) cells plateaus at 1 250 lux<br><br>**or**<br><br>the increase in the number of (extra algal) cells plateaus at $2.50 \times 10^6$ (extra algal) cells | do **not** accept as number of cells increases, light intensity increases<br><br>allow the number of cells does not increase above 1 250 lux<br><br>allow the number of cells is the same at 1 250 and 1500 lux<br><br>allow the number of (extra algal) cells does not increase above $2.50\ x10^6$ | 1<br><br>1 | AO3<br>4.2.2.6 |
| **02.6** | there would be an increase in the number of cells<br><br>(because) the rate of photosynthesis would increase | <br><br>allow (because) enzyme action increases<br>allow (because) cells divide faster<br>ignore temperature is a limiting factor unqualified | 1<br><br>1 | AO3<br><br>AO2<br><br>4.2.2.6 |
| **Total** | | | **16** | |

| Question | Answers | Extra information | Mark | AO / Spec. Ref. |
|---|---|---|---|---|
| **03.1** | any **one** from:<br>• rocks<br>• minerals<br>• fertilisers<br>• herbicides<br>• pesticides | ignore soil | 1 | AO3<br>4.4.1.8 |
| **03.2** | any **two** from:<br>• greatest rainfall was in January 2018<br>• least rainfall was in June 2018<br>• less rainfall in the summer (months)<br>**or**<br>most rainfall in the winter (months) | allow comparison of data for two or more months | 2 | AO3<br>4.4.1.7 |
| **03.3** | (increase in rainfall = 136 – 108) = 28 mm<br><br>$\frac{28}{108} \times 100$<br><br>= 25.9 (%) | <br><br>allow correct calculation using incorrectly calculated value of increase in rainfall from step 1<br><br>allow 25.9259259 (%) correctly rounded to at least 2 significant figures | 1<br><br>1<br><br>1 | AO2<br>4.4.1.7 |

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|---|---|---|---|---|
| **03.4** | any **one** from:<br>• many complex changes / factors affect the climate / rainfall<br>• (future rainfall is difficult to predict) as have to make assumptions about future greenhouse gas emissions<br>• (future rainfall is difficult to predict) as have to make assumptions about the effect of climate change<br>• (future rainfall is difficult to predict) as have to make assumptions about the effect of global warming<br>• (future rainfall is difficult to predict) as past data fluctuates | | 1 | AO3<br>4.4.1.4 |

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|---|---|---|---|---|
| **03.5** | **change:**<br>move the thermometer so the bulb is just below the level of the delivery tube<br><br>**reason:**<br>(so) the bulb is measuring the temperature of the (water) vapour | allow move the thermometer out of the (fresh) water<br><br>allow (because fresh) water is not pure water<br>allow (because fresh) water contains impurities | 1<br><br>1 | AO3<br>4.1.1.5<br>4.4.1.8<br>RPA11 |

| | | | | |
|---|---|---|---|---|
| **03.6** | **change:**<br>use a (liebig) condenser (instead of delivery tube)<br><br>**reason:**<br>(so) more / all water vapour condenses | allow use an ice bath around the beaker | 1<br><br>1 | AO3<br>4.4.1.8<br>RPA11 |

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|---|---|---|---|---|
| **03.7** | requires a lot of energy<br><br>(so) the cost would be high | allow expensive | 1<br><br>1 | AO2<br><br>AO3<br><br>4.4.1.8 |

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|---|---|---|---|---|
| **03.8** | reverse osmosis | | 1 | AO1<br>4.4.1.8 |
| **Total** | | | **14** | |

| Question | Answers | Extra information | Mark | AO / Spec. Ref. |
|---|---|---|---|---|
| **04.1** | any **one** from :<br>• the loggerhead turtle is at level 3 **and** level 4<br>• the loggerhead turtle is a secondary consumer **and** a tertiary consumer | | 1 | AO2<br>4.4.2.1 |

| Question | Answers | Mark | AO / Spec. Ref. |
|---|---|---|---|
| 04.2 | **Level 3:** Relevant points (reasons/causes) are identified, given in detail and logically linked to form a clear account. | 5–6 | AO3 |
| | **Level 2:** Relevant points (reasons/causes) are identified, and there are attempts at logical linking. The resulting account is not fully clear. | 3–4 | AO2 |
| | **Level 1:** Points are identified and stated simply, but their relevance is not clear and there is no attempt at logical linking. | 1–2 | AO2 |
| | **No relevant content** | 0 | 4.4.2.1<br>4.4.2.2 |
| | **Indicative content**<br>• eel population will decrease<br>• because less clams to eat<br>• algae levels will increase<br>• because less algae being eaten<br>• crabs may decrease<br>• because less clams to eat<br>• crabs may stay the same<br>• because more algae but less clams<br>• crabs may decrease<br>• because more eaten by loggerhead turtles<br>• crabs may increase<br>• because more algae<br>• loggerhead turtles may decrease<br>• because less clams to eat<br>• loggerhead turtles may stay the same<br>• because more crabs but less clams<br>• loggerhead turtles may increase<br>• because more crabs<br>• shark may decrease<br>• because loggerhead turtles may decrease<br>• shark may stay the same<br>• because the loggerhead turtle is unaffected<br>• shark may increase<br>• because the loggerhead turtle may increase<br><br>For Level 3, relevant points must be given for several organisms directly linked within the food chain and the causes for the change. | | |

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|---|---|---|---|---|
| **04.3** | | max 3 marks if information in table 3 not used | | |
| | (use of fossil fuels) increases greenhouse gases<br>**or**<br>increase in carbon dioxide (released) | | 1 | AO2<br>4.4.1.4 |
| | (causing) an increase in global temperature<br>**or**<br>global warming causes temperature to rise<br>**or**<br>greenhouse effect causes temperature to rise | | 1 | AO2<br>4.4.1.3 |
| | (so there) is an increase in number of females born<br>**or**<br>decrease in number of males born | | 1 | AO3<br>4.4.1.5 |
| | leading to decrease in the population / extinction | | 1 | AO3<br>4.4.1.5<br>4.4.2.6 |

| | | | |
|---|---|---|---|
| **Total** | | | **11** |

| Question | Answers | Extra information | Mark | AO / Spec. Ref. |
|---|---|---|---|---|
| **05.1** | any **two** from:<br>• was more tired<br>• less practice<br>• less caffeine<br>• had drunk alcohol | allow converse if clearly describing student **B**<br>allow correct reference to named drug<br>ignore experimental method<br>ignore fitter | 2 | AO3<br>4.2.1.6<br>RPA 8 |
| **05.2** | the computer (timer) had a higher resolution<br>the metre rule could slip through the hand causing inaccurate readings | ignore reference to human error<br>ignore reference to accuracy / precision<br>allow converse<br>allow it is harder to catch a ruler than press a button | 1<br>1 | AO3<br>4.2.1.6<br>RPA 8 |
| **05.3** | in a longitudinal wave, the oscillations / vibrations are parallel to the direction of energy transfer<br>in a transverse wave, the oscillations / vibrations are perpendicular to the direction of energy transfer | allow direction of travel for energy transfer<br>allow direction of travel for energy transfer<br>if no other mark scored allow **1** mark for transverse waves have peaks and troughs **and** longitudinal waves have compressions and rarefactions | 1<br>1 | AO1<br>4.1.4.1 |

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|---|---|---|---|---|
| **05.4** | | max 3 marks if not in correct order | | |
| | (temperature) receptors (in the skin / hand detect the information) | | 1 | AO2 |
| | an (electrical) impulse travels along the sensory neurone | ignore message / signal / information | 1 | AO1 |
| | (then) travels along the relay neurone and then the motor neurone | | 1 | AO1 |
| | chemical moves / diffuses across the synapse | ignore gap<br>allow chemical moves / diffuses across the synapse applied to between any two neurons in the pathway | 1 | AO1<br>4.2.1.6 |

| | | | |
|---|---|---|---|
| **Total** | | | **10** |

| Question | Answers | Extra information | Mark | AO / Spec. Ref. |
|---|---|---|---|---|
| **06.1** | any **one** from:<br><br>• asthma attack<br><br>• higher pollution levels<br>• higher stress level<br>• developed a cold<br>• lower air temperature<br>• time of day | <br><br>allow whether asthma medication has been taken or not<br><br><br><br>allow colder day<br><br>ignore references to alcohol / caffeine | 1 | AO3<br>4.2.1.3 |
| **06.2** | $473 = \frac{467 + \mathbf{X} + 478}{3}$<br><br>**X** = (473 × 3) – (467 + 478)<br><br>**X** = 474 ($dm^3$ per minute)<br><br>**or**<br><br>(mean = 473)<br>473 × 3 = 1419 (1 mark)<br><br>**X** = 1419 – (467 + 478)<br>(1 mark)<br><br>**X** = 474 ($dm^3$ per minute)<br>(1 mark) | <br><br><br><br><br><br><br><br>allow 1419 – 945<br><br><br>allow an answer of 473 to 475 for **3** marks using trial and improvement method | 1<br><br>1<br><br>1 | AO2<br>4.2.1.3 |

| | | | | |
|---|---|---|---|---|
| **06.3** | | ignore large surface area | | |
| | thin wall | allow one cell thick<br>do **not** accept thin cell wall<br>ignore thin cell membrane | 1 | AO2<br>4.2.1.2 |
| | (so) a short diffusion pathway | allow short diffusion distance | 1 | AO1<br>4.2.1.2 |
| | large network of blood capillaries / vessels<br><br>**or**<br>well ventilated | | 1 | AO1<br>4.2.1.2 |
| | to maintain the concentration gradient | allow to maintain a steep diffusion gradient | 1 | AO2<br>4.2.1.3 |

| | | | |
|---|---|---|---|
| **Total** | | | **8** |

| Question | Answers | Extra information | Mark | AO / Spec. Ref. |
|---|---|---|---|---|
| **07.1** | thyroxine | allow phonetic spelling | 1 | AO1<br>4.2.1.7 |
| **07.2** | FSH | | 1 | AO3<br>4.3.1.6 |
| **07.3** | progesterone | | 1 | AO3<br>4.3.1.6 |
| **07.4** | any **two** from:<br>• stimulates growth of the uterus lining<br>• stimulates the release of LH / **Y**<br>• inhibits FSH / **X** | allow builds up the uterus lining<br>allow maintains the uterus lining<br>do **not** accept reference to the uterus wall | 2 | AO1<br>AO3<br>4.3.1.6 |
| **07.5** | FSH is given to stimulate the maturation of (many) eggs / ova<br><br>(then) LH is given to stimulate ovulation / egg release<br><br>(so) more eggs / ova are released which increases the chance / probability of fertilisation | | 1<br><br>1<br><br>1 | AO1<br><br>AO1<br><br>AO2<br><br>4.3.1.6<br>4.3.1.8 |
| **07.6** | success rates fall as age increases giving correct data | examples of correct data:<br>• the success rate falls from 23% to 2% when a women is over 44<br>• success rates drop by 8% to only 15% when she reaches the age of 38 years<br>• drops by 14% to only 9% when she reaches the age of 40 years<br>• drops by 20% to only 3% when she reaches the age of 43 years | 1 | AO3<br>4.3.1.8 |

| | | | |
|---|---|---|---|
| **Total** | | | **9** |

| Question | Answers | Extra information | Mark | AO / Spec. Ref. |
|---|---|---|---|---|
| **08.1** | any **two** from:<br>• diet<br>• BMI<br>• previous medical history<br>• previous exercise routine<br>• smoker<br>• (no) medication / drugs<br>• how often they exercised<br>• patients in both groups studied over same period of time<br>• the number of people in each group | ignore reference to energy transferred / age / sex<br>ignore distance<br>allow example eg asthma<br>do **not** accept exercised for same period of time | 2 | AO3<br>4.3.1.1<br>4.3.1.2 |
| **08.2** | heart rate is increased for a greater length of time | allow heart rate is raised for longer<br>allow more time is spent strengthening the heart muscle | 1 | AO3<br>4.3.1.2<br>4.3.1.3 |
| **08.3** | (causes) fatty deposits to build up in the coronary arteries<br>(which) narrows / blocks the coronary arteries reducing blood flow (to heart muscle) | need reference to coronary arteries at least once for max marks<br>allow build-up of plaque(s) / cholesterol in coronary arteries<br>allow narrows / blocks the coronary arteries reducing oxygen / glucose supply (to heart muscle) | 1<br>1 | AO1<br>4.3.1.3 |
| **08.4**<br>**View with Fig 11** | tangent drawn to the curve at 8.5 minutes<br>values correctly read<br>calculation of rate at 8.5 minutes $\frac{\Delta x}{\Delta y}$ | | 1<br>1<br>1<br>1 | AO2<br>4.2.1.3 |

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|---|---|---|---|---|
| | 2.7 | allow correctly calculated values in range 2.5 -3.0 | | |

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|---|---|---|---|---|
| **08.5** | muscle cells transfer energy faster<br>**or**<br>more energy needed (for muscle contraction)<br><br>(so) rate of respiration increases<br><br>(which needs) oxygen / glucose to be supplied faster | do **not** accept energy is produced / created / made<br><br><br><br><br>allow (and) carbon dioxide / lactic acid needs to be removed faster (to avoid low pH) | 1<br><br><br><br>1<br><br>1 | AO2<br><br><br><br>AO1<br><br>AO1<br><br>4.2.1.1<br>4.2.1.3 |

| | | | |
|---|---|---|---|
| **Total** | | | **12** |

| Question | Answers | Extra information | Mark | AO / Spec. Ref. |
|---|---|---|---|---|
| **9.1** | meiosis | | 1 | AO2<br>4.1.3.5 |
| **9.2** | odd / uneven number of chromosomes<br><br>(so) cannot separate / divide evenly | allow **only** 5 chromosomes<br><br>allow pairs of chromosomes cannot form | 1<br><br>1 | AO2<br><br>AO3<br><br>4.1.3.5 |
| **9.3** | any **four** from:<br>• DNA / chromosomes replicate / duplicate<br>• organelles increase in number<br>• chromosomes pulled apart / separate<br>**or**<br>chromosomes move to opposite poles / ends of cell<br>• nucleus divides<br>**or**<br>two nuclei form<br>• cell divides to form two genetically identical cells | max 3 marks if incorrect order of process<br><br>ignore genetic material<br><br>allow named organelle eg mitochondria, ribosome | 4 | AO1<br>4.1.3.4 |
| **9.4** | restricts / stops the flow of magnesium ions **so** less / no chlorophyll made | allow magnesium ions cannot get to the leaves | 1 | AO2<br>4.2.2.2 |
| **9.5** | transfer the gene for TR4 resistance into edible banana plants | | 1 | AO3<br>4.4.4.6 |
| **Total** | | | **9** | |