GCSE
BIOLOGY
8461/2H

Paper 2 Higher Tier

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.

No student should be disadvantaged on the basis of their gender identity and/or how they refer to the gender identity of others in their exam responses.

A consistent use of 'they/them' as a singular and pronouns beyond 'she/her' or 'he/him' will be credited in exam responses in line with existing mark scheme criteria.

Further copies of this mark scheme are available from aqa.org.uk

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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 their judgement
- the Assessment Objectives 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 (for example, a scientifically correct answer that could not reasonably be expected from a student's knowledge of the specification).

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**.
Alternative words in the mark scheme are shown by a solidus 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 errors / 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** magnetic materials.

[2 marks]

Student	Response	Marks awarded
1	iron, steel, tin	1
2	cobalt, nickel, nail*	2

3.2 Use of symbols / formulae

If a student writes a chemical symbol / formula instead of a required chemical name, or uses symbols to denote quantities in a physics equation, 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. At any point in a calculation students may omit steps from their working. If a subsequent step is given correctly, the relevant marks may be awarded.

Full marks should be awarded for a correct numerical answer, without any working shown.
Full marks are **not** awarded for a correct final answer from incorrect working.

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

An error can be carried forward from one question part to the next and is shown by the abbreviation 'ecf'.

Within an individual question part, an incorrect value in one step of a calculation does not prevent all of the subsequent marks being awarded.

3.6 Phonetic spelling

Marks should be awarded if spelling is not correct but the intention is clear, **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.

3.11 Numbered answer lines

Numbered lines on the question paper are intended to support the student to give the correct number of responses. The answer should still be marked as a whole.

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, if necessary, 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. With practice and familiarity you will find that for better answers you will be able to quickly skip through the lower levels of the mark scheme.

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 1

Question	Answers	Extra information	Mark	AO / Spec. Ref.
01.1		allow skeleton **or** hard parts for bones throughout ignore compression ignore reference to oxygen		AO2 4.6.3.5
	any **two** from:		2	
	• (ichthyosaur died and) is buried in sediment / sand / mud / silt	do **not** accept (icthyosaur died and) is buried in rock(s)		
	• (only) soft parts decayed / eaten **or** bones were not decayed / eaten			
	• bone(s) / remains replaced by minerals	allow mineralisation of bones allow bone(s) left imprint in mud / sand / sediment (that then hardened to rock) ignore bones turned to stone / rock		

Question	Answers	Extra information	Mark	AO / Spec. Ref.
01.2		allow conversion to metres at any stage		AO2 4.6.3.5
	120 × 17		1	
	2040 (mm)		1	
	2.04 (metres)	allow correct conversion of incorrectly calculated length	1	

Question	Answers	Extra information	Mark	AO / Spec. Ref.
01.3		in this order only		AO1 4.6.3.5 4.6.4
	phylum		1	
	family		1	

Question	Answers	Extra information	Mark	AO / Spec. Ref.
01.4	any **two** from: • ice age • global warming • volcanic activity • asteroid collision • new predators • (new) disease / pathogen • competition for mates • lack of habitat **or** habitat change	 } if neither of these, allow climate change for **1** mark ignore weather } if neither of these, allow catastrophic event **or** natural disaster for **1** mark allow named example allow hunters allow named example allow lack of mates ignore competition unqualified ignore environment change allow competition between **ichthyosaurs** for food ignore isolation ignore pollution ignore lack of food	2	AO1 4.6.3.6

Total Question 1	**9**

Question 2

Question	Answers	Extra information	Mark	AO / Spec. Ref.
02.1	to remove all / the water	allow to make sure there is no water left allow to make sure the soil is (completely) dry ignore to remove water unqualified	1	AO3 4.7.1.2 4.7.2.1

Question	Answers	Extra information	Mark	AO / Spec. Ref.
02.2	$\frac{71}{252} \times 100$ 28.1(746…) 28 (%)	 allow student's incorrectly calculated percentage using mass data for 20 metres, rounded to nearest whole number	1 1 1	AO2 4.7.1.2 4.7.2.1

Question	Answers	Extra information	Mark	AO / Spec. Ref.
02.3	as distance increases the percentage of water increases	allow positive correlation allow as one increases the other increases allow as one decreases the other decreases ignore directly proportional	1	AO3 4.7.1.2 4.7.2.1 RPA9

Question	Answers	Extra information	Mark	AO / Spec. Ref.
02.4	any **two** from: • repeat (at each distance) **and** calculate a mean • test at intermediate / further distances • test around more / different trees • test at different angles around the (same) tree	 allow repeat (at each distance) **and** remove / identify anomalies allow test more areas	2	AO3 4.7.1.2 4.7.2.1 RPA9

Question	Answers	Extra information	Mark	AO / Spec. Ref.
02.5	any **three** from: • light (intensity) • temperature • type of soil • pH (of soil) • minerals / ions (in soil) • wind (intensity / direction) • oxygen in soil	 if neither awarded allow shade for **1** mark ignore sun allow acidity / alkalinity (of soil) allow salts **or** named examples of ions, such as nitrate allow fertiliser ignore nitrogen / nutrients ignore (availability of) space ignore carbon dioxide	3	AO2 4.7.1.1 4.7.1.2 4.7.2.1 RPA9

Total Question 2	**10**

Question 3

Question	Answers	Extra information	Mark	AO / Spec. Ref.
03.1	growth (response) due to gravity	ignore direction of growth	1 1	AO1 4.5.4.1

Question	Answers	Mark	AO / Spec. Ref.
03.2	**Level 3:** The method would lead to the production of a valid outcome. The key steps are identified and logically sequenced.	5–6	AO1 4.5.4.1 RPA8
	Level 2: The method would not necessarily lead to a valid outcome. Most steps are identified, but the plan 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 • place a seedling in box with slit • place a seedling in darkness **or** in all-round light • measure initial heights of shoots • measure final heights of shoots **or** measure shoots with a ruler **or** measure the growth of shoots • record a named feature of appearance of seedlings • detail of how bent shoots are measured eg use thread or straighten them out • repeat with several seedlings • calculate mean height increase for each condition • compare results (for each condition) *control variable(s)* ○ same number of seedlings (per pot / condition) ○ same temperature ○ same volume of water ○ same soil type / volume ○ same age of seedlings ○ same species / type of plant ○ same time left for For **Level 3**, a method comparing the growth of plants in light from one direction with plants in full light / darkness along with control variables is required.		

Question	Answers	Extra information	Mark	AO / Spec. Ref.
03.3	auxin		1	AO1 4.5.4.1

Question	Answers	Extra information	Mark	AO / Spec. Ref.
03.4	there is an uneven distribution of the hormone		1	AO1 4.5.4.1

Question	Answers	Extra information	Mark	AO / Spec. Ref.
03.5	leaves / plant receive(s) / absorb(s) more light (so) more photosynthesis (which produces) more glucose	 allow (which produces) more starch / carbohydrate / sugar allow (which produces) more (named) organic material / other named organic substance if no other marks awarded allow **1** mark for any two of the mark points with no reference to 'more'	1 1 1	AO2 4.5.4.1 4.4.1.1 4.4.1.3

Total Question 3	13

Question 4

Question	Answers	Extra information	Mark	AO / Spec. Ref.
04.1	ADH **or** antidiuretic hormone	allow other correct pituitary hormone eg FSH / LH / TSH ignore functions of hormones	1	AO1 4.5.3.3

Question	Answers	Extra information	Mark	AO / Spec. Ref.
04.2	any **one** from: • (it would) be digested to amino acids • (it would) be digested by protease • (it would) be digested (by enzymes) in the stomach • (it would) be digested (by enzymes) in the small intestine • (it would) be digested so (hGH is) not absorbed	allow 'broken down' for digested throughout	1	AO2 4.2.2.1 4.5.3.3

Question	Answers	Extra information	Mark	AO / Spec. Ref.
04.3	isolate (hGH) gene from human DNA / chromosome	allow cut (hGH) gene from human DNA / chromosome	1	AO1 4.6.2.4
	join (hGH) gene to (cut) <u>plasmid</u>		1	
	put plasmid (containing gene) into bacteria		1	
	enzyme used at a suitable stage: to cut (hGH) gene from human DNA **or** to insert / join (hGH) gene to plasmid	allow reference to named enzyme used in genetic engineering allow to insert / join (hGH) gene to bacterial DNA	1	

Question	Answers	Extra information	Mark	AO / Spec. Ref.
04.4		allow converse if clearly referring to GH		AO3 4.6.2.4
	any **two** from: • (hGH) easier to isolate / purify / extract • made in larger quantities • no / less chance of immune reaction • no / less chance of passing on disease / pathogens (from animals to humans) **or** no / less chance of infection (of humans) • no / less chance of containing antibiotics / urea / drugs • it is the specific human hormone so may be more effective (in human body)	 ignore reference to speed of production allow no / less chance of rejection ignore reference to side effects allow named (animal) disease eg BSE allow animal GH may not be the correct shape ignore ethical / religious reasons ignore reference to cost	2	

Total Question 4	**8**

Question 5

Question	Answers	Extra information	Mark	AO / Spec. Ref.
05.1	for burning / combustion as compost	allow as a fuel allow for growing plants ignore as fertiliser allow to improve soil drainage / texture / quality allow as a building material allow as animal feed / supplement	1 1	AO1 4.7.3.3

Question	Answers	Extra information	Mark	AO / Spec. Ref.
05.2	the variety of (all) <u>species</u> on Earth **or** the variety of (all) <u>species</u> in a habitat / area / ecosystem / community	allow the number of (all) <u>species</u> on Earth allow the number of (all) <u>species</u> in a habitat / area / ecosystem / community	1	AO1 4.7.3.1

Question	Answers	Mark	AO / Spec. Ref.
05.3	**Level 3:** Relevant points (reasons / causes) are identified, given in detail and logically linked to form a clear account.	5–6	AO1 4.7.2.4 4.7.3.1 4.7.3.3 4.7.3.5
	Level 2: Relevant points (reasons / causes) are identified, and there are attempts at logical thinking. The resulting account is not fully clear.	3–4	
	Level 1: Points are identified and stated simply, but their relevance is not clear and there is no attempt at logical thinking.	1–2	
	No relevant content	0	
	Indicative content • (destruction of peat) causes decrease in biodiversity locally / globally ***Local effects*** • causes death / extinction of (local) populations / species o (due to) loss of (specialised) habitat o (so) lack of food o (so) lack of shelter • causes migration of (local) populations / species o (due to) loss of (specialised) habitat o (so) need to find food o (so) need to find shelter ***Global effects*** • (removal of peat) releases (trapped) carbon dioxide • (removal of peat) releases (trapped) methane • burning peat releases carbon dioxide • decay of peat releases carbon dioxide (from respiration of microorganisms) • decay of peat releases methane (from anaerobic respiration of microorganisms) o (causes) global warming **or** greenhouse effect o (causes) climate change **or** extreme weather o (causes) melting ice caps **or** rising sea levels **or** flooding o (causes) drought / desertification **or** changing rainfall patterns o (causes) loss of food / habitats o (so) migration patterns change o (so) some species / organisms become extinct For **Level 2**, must refer to local and global effects with an explanation. For **Level 3**, must give an explanation for local and for global effects supported by other details for local and / or global effects.		

Total Question 5	**9**

Question 6

Question	Answers	Extra information	Mark	AO / Spec. Ref.
06.1	cell division **1**		1	AO2 4.1.2.2 4.6.1.1 4.6.1.2

Question	Answers	Extra information	Mark	AO / Spec. Ref.
06.2	**A** and **C**		1	AO2 4.1.2.2 4.6.1.1 4.6.1.2

Question	Answers	Extra information	Mark	AO / Spec. Ref.
06.3	23 **or** twenty three	do **not** accept 23 pairs	1	AO2 4.6.1.2 4.6.1.8

Question	Answers	Extra information	Mark	AO / Spec. Ref.
06.4	5 / five **or** 6 / six	ignore reference to letters	1	AO2 4.6.1.2 4.6.1.8

Question	Answers	Extra information	Mark	AO / Spec. Ref.
06.5	(only) mitosis	do **not** accept meiosis / meitosis / metosis	1	AO1
	(so) **all** <u>cells</u> receive a copy of every allele / gene	allow (so) **all** <u>cells</u> receive a copy of every chromosome **or** (so) **all** <u>cells</u> receive a copy of all the DNA **or** (so) **all** <u>cells</u> receive a full set of chromosomes	1	AO2 4.6.1.1 4.1.2.2 4.6.1.3

Question	Answers	Extra information	Mark	AO / Spec. Ref.
06.6	gametes are produced by meiosis		1	AO1
	(so) offspring have unique / different / random combinations of alleles / genes / chromosomes from each parent / gamete	allow (so) gametes fuse creating unique / different / random combinations of alleles / genes / chromosomes in offspring	1	AO2 4.6.1.1 4.6.1.2

Question	Answers	Extra information	Mark	AO / Spec. Ref.
06.7	any **two** from: • faster than sexual • many offspring produced to colonise local area **or** many offspring produced to out-compete other species • genetically identical offspring so well adapted to current conditions / environment • only one parent needed so no need for pollinators / bees • offspring receive water **and** sugars / minerals / ions / salts from parent • less energy / materials required as no need to produce gametes / flowers / seeds / fruits		2	AO1 4.6.1.1 4.6.1.3

Question	Answers	Extra information	Mark	AO / Spec. Ref.
06.8	any **two** from: • new combinations of alleles gives genetic variation **or** genetic variation gives selective advantage • seeds dispersed to new / wider area so less vulnerable to habitat loss **or** seeds dispersed to new / wider area so not competing with (parent / offspring) plants for space / water / minerals • larger number of offspring produced so will increase the population quickly	 allow genetic variation provides the opportunity for evolution allow genetic variation enables species to adapt to new / changed environments allow larger number of offspring produced will improve survival of the species	2	AO1 4.6.1.1 4.6.1.3 4.6.2.2 4.6.3.1

Total Question 6	**12**

Question 7

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.1	15 cm		1	AO3 4.5.2.1 RPA7

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.2		allow correct conversion to milliseconds at any point in the calculation		AO2 4.5.2.1 RPA7
	substitution $t = \sqrt{\frac{2 \times 16}{980}}$ (seconds)	allow $t = \sqrt{\frac{32}{980}}$ (seconds)	1	
	correct answer t = 0.18070... (seconds)	all subsequent marks can be awarded using an incorrectly calculated value	1	
	conversion to milliseconds t = 180.7 (milliseconds)		1	
	rounding to 3 significant figures 181 (milliseconds)	allow student's incorrectly / not converted answer correctly rounded to 3 significant figures	1	

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.3	any **two** from: • use ruler with smaller / mm divisions • align 0 cm on ruler with **top** / **bottom** of (student's **B**'s) thumb • same distance between (student **B**'s) finger(s) and thumb • (student **B)** supports arm / hand / wrist / elbow on bench / table • use same hand (each time) • convert distance to time • allow drop ruler without warning **or** drop ruler at random time intervals	 allow use a ruler with a more precise scale allow use a ruler with a better resolution ignore use a more accurate ruler allow same starting position of ruler above (student **B**'s) hand allow make sure (student **B**'s) hand is stationary allow use dominant **or** non-dominant hand each time allow use of mechanical / electronic device to hold and drop ruler allow idea of controlling distraction / caffeine / sleep / alcohol allow use a computer program (to measure reaction time)	2	AO3 4.5.2.1 RPA7

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.4	receptor (in eyes) detect stimulus / movement	allow retina detects stimulus / movement	1	AO1 4.5.2.1 4.5.2.2
	impulses generated / transmitted / travel	allow electrical signals generated / transmitted / travel ignore messages / information	1	4.5.2.3
	(from) sensory neurone (to relay neurone) to motor neurone		1	
	(along) optic nerve to brain	ignore CNS / spinal cord	1	
	chemical crosses synapses between neurones		1	
	effector / muscle in fingers / hand / arm contracts (to catch the ruler)		1	

Total Question 7	**13**

Question 8

Question	Answers	Extra information	Mark	AO / Spec. Ref.
08.1	*genotype* **HH**	allow homozygous dominant	1	AO3
	reason all offspring have (at least one) **H** **or** female **A** gives **H** to every offspring **or** none of the offspring are white so female **A** does not have a **h**	MP2 is dependent on MP1	1	AO2 4.6.1.6

Question	Answers	Extra information	Mark	AO / Spec. Ref.
08.2	gametes correct for both parents: **H** + **h**		1	AO2
	correct derivation of offspring genotypes: **HH** + **Hh** + **Hh** + **hh**	allow correct derivation from incorrect gametes	1	AO2
	correct phenotype for each genotype: **HH** + **Hh** = Himalayan **and hh** = white	allow correct phenotypes for stated genotypes	1	AO2
	probability correct for offspring genotypes, eg 0.25 / ¼ / 25% / 1 in 4	allow 1:3 do **not** accept 1 in 3 / 1:4 / 3:1 do **not** accept 0 / 100%	1	AO3 4.6.1.6

Question	Answers	Extra information	Mark	AO / Spec. Ref.
08.3	gives different set of 3 bases	allow gives a different triplet ignore codon	1	AO1
	codes for a different amino acid		1	AO1
	(which) alters shape of the (enzyme's) active site	allow the (enzyme's) active site is no longer complementary (to tyrosine / substrate)	1	AO2
	(so) tyrosine / substrate no longer fits	allow cannot form enzyme-substrate complexes	1	AO2 4.6.1.5 4.2.2.1

Question	Answers	Extra information	Mark	AO / Spec. Ref.
08.4	temperature inside mother's body is greater than 35 °C **or** temperature inside nest is greater than 35 °C	allow mother's body temperature is 39 °C	1	AO2
	(so) tyrosinase / enzyme does not work	allow tyrosinase / enzyme is inactive do **not** accept tyrosinase / enzyme is denatured	1	AO3 4.2.2.1 4.6.2.1

Question	Answers	Extra information	Mark	AO / Spec. Ref.
08.5	outside environment is cooler	allow outside environment is less than 35 °C	1	AO2 4.5.2.4
	rabbit loses heat from ears / nose / feet / extremities **or** temperature of ears / nose / feet / extremities drops (more than rest of body)		1	
	(so) tyrosinase is (more) active		1	

Question	Answers	Extra information	Mark	AO / Spec. Ref.
08.6	stops (UV / ionising) radiation causing mutation (in skin cells) (which can) lead to (skin) cancer	allow UV / ionising radiation can cause mutation (in skin cells) allow description of cancer eg tumours **or** uncontrolled cell division	1 1	AO2 4.2.2.6 4.2.2.7 4.6.1.5

Total Question 8	**17**

Question 9

Question	Answers	Extra information	Mark	AO / Spec. Ref.
09.1		allow converse allow answers in terms of likelihood of having / getting (Type 2) diabetes		AO3 4.5.3.2
	(percentage of people with Type 2) diabetes increases with age	allow more old people have (Type 2) diabetes	1	
	(percentage of people with Type 2) diabetes increases with increased (body) mass / weight	allow more obese people have (Type 2) diabetes allow (percentage of people with type 2) diabetes increases with obesity	1	

Question	Answers	Extra information	Mark	AO / Spec. Ref.
09.2	7.65 %		1	AO3 4.3.1.9 4.5.3.2

Question	Answers	Mark	AO / Spec. Ref.
09.3	**Level 3:** A judgement, strongly linked and logically supported by a sufficient range of correct reasons, is given.	5–6	AO3 4.3.1.9 4.5.3.2
	Level 2: Some logically linked reasons are given. There may also be a simple judgement.	3–4	
	Level 1: Relevant points are made. They are not logically linked.	1–2	
	No relevant content	0	

	Indicative content allow 'investigation 1' for drug **A** and 'investigation 2' for drug **B** throughout **Methods** *Methods are not comparable because:* • different methods are used to administer the drugs - injection (drug **A**) and pill (drug **B**) **or** drug **A** acts more quickly (than drug **B**) • dosage for drug **A** and drug **B** might differ (as dosage is not stated) • drug **A** and drug **B** are tested for different time periods **or B** is given for a longer period (24 weeks) (than **A** - 12 weeks) • placebo / control only included when testing drug **B** • only drug **B** has intermediate readings **or** fewer readings were taken when testing drug **A** • different sample sizes were used **or** greater sample size used when testing drug **B** (**A** = 175, **B** = 631 / 1261) • different scientists carried out each investigation • no double-blind trial for drug **A** *Methods may be similar because:* • neither drug trial was double-blind • quantitative tests in both trials • (relatively) large sample size used for both drugs **Usefulness of drug A and drug B** allow 'blood glucose' for Hb-G throughout o both lower Hb-G (levels) o both lower Hb-G to similar levels o drug **A** reduced Hb-G more than drug **B** o neither drug reduced Hb-G to an acceptable value (<7%) o Hb-G increases after 18 weeks with drug **B** o no information on side effects for either drug o no information on the trend for drug **A** For **Level 1**, details about the method **or** usefulness of the drugs must be given. For **Level 3**, details about the method **and** usefulness of the drugs must be given.		

Total Question 9	**9**