AQA GCSE Biology | 8461

SPECIFICATION POINT 4.5.3.5

Contraception

Mark schemes and examiner comments

Tier	**Higher**
Question groups	**10**
Available paper years	**2007–2024**

Using this booklet

1. Booklet answer numbers match the question booklet.
2. Use the original question number within marking tables.
3. Examiner comments are included where available.

Name: _____ **Date:** _____

Where a precise marking extract is unavailable, the full source document is included in an appendix. Any missing mark scheme is explicitly identified.

4.5.3.5 Contraception

Answer 01 · Mark scheme

Question 8

	answers	extra information	mark
(a)	inhibits FSH (production / secretion)		1
	(therefore) no eggs mature / released **or** effect of FSH on ovary described	if no other marks gained allow 1 mark for no eggs produced references to LH are neutral	1
(b)	Pros max 2marks from 4 marks e.g. • large scale trial gave better results • chose uneducated women so that if these women could use it correctly, women elsewhere would be able to cons max 3 marks from 4 marks e.g. • used pill with high dose of hormone – **either** so results not valid for general use of hormone **or** dangerous • side effects ignored • women not told pill was experimental / pill might have side effects • no placebo • should have tried a range of doses • should have done pre-trial to check for side effects conclusion 1 mark e.g. trials flawed therefore cons outweigh pros accept reverse e.g. trials flawed but pros outweigh cons	maximum 4 marks if no conclusion	max 2 from 4 max 3 from 4 1
total			7

4.5.3.5 Contraception

Answer 02 · Mark scheme June 2007 | BLY1H | Original Q5 | Legacy

The full source mark scheme begins on page 9. Follow original question 5 in that document.

Answer 03 · Mark scheme November 2007 | BLY1A | Original Q6 | Legacy

Six	**3**	**3**	**1**	**1**

Answer 04 · Mark scheme March 2008 | BLY1AP | Original Q8 | Legacy

Eight	**3**	**4**	**1**	**4**

Answer 05 · Mark scheme June 2008 | BLY1AP | Original Q7 | Legacy

Seven	**1**	**1**	**1**	**4**

Answer 06 · Mark scheme June 2009 | BLY1AP | Original Q8 | Legacy

Eight	**3**	**4**	**1**	**1**

Answer 07 · Mark scheme November 2009 | BLY1AP | Original Q9 | Legacy

No matching mark scheme was available in the supplied archive for this question.

4.5.3.5 Contraception

Answer 08 · Mark scheme June 2011 | BLY1AP | Original Q9 | Legacy

Nine	**2**	**3**	**3**	**1**

The AQA UMS Conversion Calculator can be found at the following web address:

http://www.aqa.org.uk/umsconversion

4.5.3.5 Contraception

Answer 09 · Mark scheme

June 2011 | BLY1H | Original Q8 | Legacy

BLY1H

Question 8

question	answers	extra information	mark
8(a)	inhibit FSH production	ignore LH production ignore wrong hormone	1
	so egg does not mature	ignore egg production / egg release / egg development	1
8(b)	any **three** comparisons: eg • ease of insertion compared ie ring easily inserted by woman whereas implant needs professional **or** no damage to skin with ring	comparisons must be made ie two separate lists will gain no marks unless the lists are linked by eg whereas / however / on the other hand **and** the points are made in the same order in both lists	3
	• length of delivery compared eg 3 weeks for ring whereas 3 years for implant **or** delivery longer for implant **or** woman has to remember to insert ring whereas does not have to remember to insert implant	ignore cost	
	• effectiveness compared eg 0.3% failure with ring whereas nil for implant **or** implant more effective		
	• number giving up compared eg 4% for ring whereas 2% for implant **or** fewer women give up using implant **or** ring might cause vaginal discomfort whereas implant may cause irregular menstrual bleeding		
	reasoned conclusion (normally at the end)	ie must state 'better because....'	1
Total			**6**

The AQA UMS Conversion Calculator is available on the Results statistics page of the AQA Website.

4.5.3.5 Contraception

Answer 10 · Mark scheme

June 2024 | 8461/2H | Original Q5

Question 5

Question	Answers	Extra information	Mark	AO / Spec Ref.
05.1	any **two** from: • same starting position of rule(r) • more precise scale • repeat **and** calculate mean **or** repeat **and** eliminate anomalies • convert distance to time • student (**B**) rests hand / arm on table	allow ensure the starting position of rule(r) is at 0cm allow other control variables allow two control variables for **2** marks allow rule(r) with mm scale ignore more accurate scale	2	AO3 4.5.2.1 RPA7

Question	Answers	Extra information	Mark	AO / Spec Ref.
05.2	any **two** from: *endocrine system:* • (hormones) via blood • chemical transmission • slower • longer-lasting	allow converse if clearly referring to nervous system allow not via neurones / cells allow not (electrical) impulses allow not electrical signals ignore messages ignore hormones answers must be comparative ignore reference to target organs	2	AO1 4.5.2.1 4.5.3.1

Question	Answers	Extra information	Mark	AO / Spec Ref.
05.3	thyroxine	do **not** accept thyroxide ignore reference to TSH / TRH	1	AO1 4.5.3.1 4.5.3.7

Answer 10 · Mark scheme

Question	Answers	Extra information	Mark	AO / Spec Ref.
05.4	any **one** from: • insulin • glucagon		1	AO1 4.5.3.1 4.5.3.2

Question	Answers	Extra information	Mark	AO / Spec Ref.
05.5	any **two** from: • increases heart rate • increases breathing rate • increases oxygen delivery to cells / tissues / organs • increases glucose delivery to cells / tissues / organs • increases respiration / metabolism • increases sweat(ing)	allow increases blood flow allow examples of cells / tissues / organs allow increases energy release do **not** accept energy produced / made / created allow dilation of pupils allow vasoconstriction in skin **or** vasoconstriction in digestive system allow raises blood sugar / glucose level **or** increase conversion of glycogen to glucose allow vasodilation in (skeletal) muscles **/** brain allow increased blood pressure allow slows digestion allow other correct effects of adrenaline if no other marks awarded allow **1** mark for prepares for 'fight or flight'	2	AO1 4.5.3.7

4.5.3.5 Contraception

Answer 10 · Mark scheme

June 2024 | 8461/2H | Original Q5

Question	Answers	Mark	AO / Spec Ref.
05.6	**Level 3:** Relevant points (reasons / causes) are identified, given in detail and logically linked to form a clear account.	5–6	AO1 4.5.3.4 4.5.3.5 4.5.3.6
	Level 2: Relevant points (reasons / causes) are identified, and there are attempts at logical linking. 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 linking.	1–2	
	No relevant content	0	
	Indicative content **contraception:** • use of hormones oestrogen and progesterone **or** progesterone (only) o inhibition of FSH (production / release) - lack of FSH prevents follicle / egg development / maturation - therefore there is no egg to fertilise o inhibition of LH (production / release) - lack of LH prevents ovulation - therefore there is no egg to fertilise • contraceptive methods include oral contraceptive pill, injection, implant, skin patch, IUD / IUS with hormones **treatment of infertility:** • use of FSH o (FSH) stimulates **maturation** of (several) egg(s) / follicle(s) - (FSH) increases number of eggs matured • use of LH o (LH) stimulates ovulation - (LH) allows eggs / follicles to be collected (from ovary) - (so) increased chance of fertilising an egg - IVF and insertion of embryo(s) into uterus • use of progesterone o (to) maintain uterus lining - increased chance of implantation For **Level 3**, details of both contraception and infertility treatment are required.		

Total Question 5	14

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ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Secondary Education

Science B 4462 / Biology 4411

BLY1H Unit Biology 1

Mark Scheme

2007 examination - June series

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Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' 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.

Further copies of this Mark Scheme are available to download from the AQA Website: www.aqa.org.uk

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MARK SCHEME

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 and help to delineate what is acceptable or not worthy of credit or, in discursive answers, to give an overview of the area in which a mark or marks may be awarded.

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

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 lines 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.)

3. Marking points

3.1 Marking of lists

This applies to questions requiring a set number of responses, but for which candidates 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.

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

Candidate	Response	Marks awarded
1	4,8	0
2	green, 5	0
3	red*, 5	1
4	red*, 8	0

Example 2: Name two planets in the solar system. (2 marks)

Candidate	Response	Marks awarded
1	Pluto, Mars, Moon	1
2	Pluto, Sun, Mars, Moon	0

3.2 Use of chemical symbols / formulae

If a candidate 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

Full marks can be given for a correct numerical answer, as shown in the column 'answers', without any working shown.

However if the answer is incorrect, mark(s) can be gained by correct substitution / working and this is shown in the 'extra information' column;

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 are 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 e.c.f. 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 Unexpected Correct Answers not in the Mark Scheme

The Examiner should use professional judgement to award credit where a candidate has given an unexpected correct answer which is not covered by the mark scheme. The Examiner should consult with the Team Leader to confirm the judgement. The Team Leader should pass this answer on to the Principal Examiner with a view to informing all examiners.

4.5.3.5 Contraception

BLY1H Question 1

	answers	extra information	mark
(a)	scientists figures based on research / calculations / data **or** scientists sample whole area	ignore reasons based on bias	1
	fishermen based on impression / hearsay / experience **or** fishermen fish in well-stocked / limited areas	scientists sample a wider area = **2** marks fishermen only fish in well-stocked areas = **2** marks if no marks gained fishermens' opinion **and** scientists' opinion gains **1** mark	1
(b)	any **two** from: • economic considerations • political impact • pressure groups **or** fears of extinction	eg fear for jobs, profits, big demand for cod eg allow EU / government decide or laws will be passed	2
total			4

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BLY1H Question 2

	answers	extra information	mark
(a)	any **two** from: • area of bed sampled • sampling time • size of net • kicking action • net position	control variables from information given	2
(b)	any **two** from: • some animals not dislodged • some animals missed / through / escaped net • invertebrates difficult to identify • invertebrates from outside area	must be ideas related to a sample ignore reliability etc	2
(c)	10 to 99 **or** 10 – 99 **or** 99 to 10 **or** 99 – 10		1
(d)	any **two** from: • increased / goes up • 0 at sample 4 • to (more than) 100	allow increase implied from all data described	2
(e)	mayfly because not found downstream of point where sewage enters stream **or** only in the unpolluted water		1 1
total			9

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BLY1H Question 3

	answers	extra information	mark
	adaptation and linked advantage eg	max **2** for 3 adaptations	max 2 max 2
	• roots widespread / long (1) to collect water from large area (1)	ignore large roots accept to collect more water	
	• some roots deep / long (1) to collect water from deep down (1)	ignore large roots accept to collect more water	
	• absence of leaves (1) reduces water loss (1)		
	• swollen stem (1) to store water (1)		
	• roots near surface (1) to absorb rainwater (1)		
	• roots widespread (1) support in sandy soil (1)		
total			4

4.5.3.5 Contraception

BLY1H Question 4

	answers	extra information	mark
(a)(i)	viruses live inside cells		1
	viruses inaccessible to antibiotic	allow drug / antibiotic (if used) would (have to) kill cell	1
(ii)	mutation	ignore mutation caused by antibiotic	1
	natural selection **or** no longer recognised by antibiotics	accept description of natural selection	1
(b)	(stimulate) antibody production	ignore antitoxin	1
	(by) white cells		1
	<u>rapidly</u> produce antibody on re-infection	ignore antibodies remain in blood	1
total			7

4.5.3.5 Contraception

BLY1H Question 5

	answers	extra information	mark
(a)	ovary or ovaries		1
(b)	(hormone) implant		1
(c)	do not have to remember to take		1
(d)	does not involve hormone **or** it is a mechanical method	allow coil may be dislodged allow egg <u>is</u> fertilised / released allow not preventing egg fertilisation / release	1
(e)	involves death of fertilised egg **or** (regard) fertilised egg as human **or** stops fertilised egg developing	allow embryo / baby for fertilised egg ignore against religion only allow fertilised egg is alive ignore side effects	1
(f)(i)	inhibit FSH (production) so no eggs mature / develop / are produced	allow inhibits LH allow (LH) <u>stimulates</u> egg release ignore progesterone	1 1
(ii)	contains FSH which causes egg to mature / develop / be produced **or** in women whose FSH is low	allow contain LH allow (LH) <u>stimulates</u> egg release	1 1
total			9

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BLY1H Question 6

	answers	extra information	mark
(a)	asexual reproduction / mitosis **or** no fusion of gametes **or** division after fusion **or** from fertilised egg **or** from same embryo **or** from same egg **and** sperm	ignore cloning	1
	each embryo has identical genetic information / genes / DNA / chromosomes		1
(b)	any **two** from: • experimental subject and control are identical **or** fair test since monkeys identical • monkeys similar to humans, so effect of drugs likely to be similar • all identical so will have same reaction to drugs / disease • it's better than catching wild ones	allow closely related so… ignore evolved from	2
total			4

4.5.3.5 Contraception

BLY1H Question 7

	answers	extra information	mark
(a)	any **two** from: • balance between two important for good heart health • high LDL causes heart disease / high cholesterol • high HDL reduces heart disease / cholesterol	ignore blood pressure do **not** accept converse argument do **not** accept converse argument	2
(b)	heart attacks greater amongst patients with low HDL levels statins reduce heart attacks of patients **or** placebo is less effective	ignore statins cause heart disease ignore comparative effects of the two statins allow pravastatin is more effective supported by appropriate calculations eg pravastatin > 39 33% < 39 31.4% Average 32.4 > 39 32% < 39 28.2% Average 30.05%	1 1
total			4

4.5.3.5 Contraception

BLY1H Question 8

	answers	extra information	mark
(a)	present day organisms have evolved from simpler organisms	ignore answers in terms of natural selection	1
	over long periods of time **or** millions / billions of years		1
(b)	(natural selection operates on successful) characteristics produced by chance / (random) mutation		1
	in this experiment caused by hormones / environment	allow this example indicates inheritance of acquired characteristics for **2** marks allow this is Lamarckism only for **1** mark	1
total			4

4.5.3.5 Contraception

Answer 10 · Examiner comments

Question 5 (standard, standard/high and high demand)

05.1 Almost 30% of students were able to suggest two ways to improve the student's method for measuring human reaction time, with a further 45% gaining one mark. Some students suggested extensions to the method rather than improvements, such as testing with caffeine or using a computer programme - which did not answer the question. A number of students gave vague responses such as 'repeat it' or 'put the ruler closer to the hand' which were insufficient for credit at this level.

05.2 Students were asked to give two ways that coordination by the endocrine system is different from coordination by the nervous system. The full range of available marking points were seen for this question, with over half of students gaining full marks. Most comparisons involved 'slower', 'longer lasting' or reference to 'electrical impulses' in the nervous system. The better answers included multiple comparisons in the same sentence ie 'endocrine is slower but longer lasting' and 'nervous involves electrical impulses carried along neurones whereas endocrine is chemicals carried in the blood.'

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4.5.3.5 Contraception

Answer 10 · Examiner comments

05.3 Over 80% of students correctly identified thyroxine as the hormone produced by gland A. Common errors included naming the gland (thyroid) rather than the hormone, or naming hormones released from the pituitary gland such as FSH, LH or ADH.

05.4 Around 80% of students were able to name one hormone produced by gland B, with insulin being the most popular response. Common incorrect responses named hormones involved in the menstrual cycle. There were mostly good spellings for 'glucagon' which has not been the case in previous years.

05.5 Almost 55% of students could describe two effects of adrenaline on the human body, the most common of which were increased heart rate and increased breathing rate. Some answers lacked detail such as 'increased awareness' or 'they have more energy' which are insufficient for credit at this level. A significant number of students gave the fall-back mark relating to preparing the body for the flight or fight response, which was only credited if no other correct responses had been given.

05.6 This was an extended response question with three levels, the highest of which was set at high demand. Students were asked to explain the use of hormones in both contraception and the treatment of infertility. Less than 10% of students were able to access Level 3, commonly due poor articulation or use of vague scientific terminology. Those that did however, showed very clear links between the correct hormones, their roles in contraception/infertility treatment and the associated consequences of using them.

Around 45% of students obtained marks in Level 2, after correctly explaining the use of at least one hormone for both contraception and infertility. Students that did not include an explanation for both contraception and the treatment of infertility were restricted to Level 1. Students are reminded to read the question carefully and ensure all parts are answered to the same standard. It was noticeable that many students spent more time explaining the roles of hormones in contraception, and then went on to possibly rush their explanation for infertility.

Regarding contraception, many students could refer to progesterone and/or oestrogen, and the subsequent inhibition of FSH and LH, but then did not specifically indicate which hormone undertook which function, and so failed to link to a consequence for either hormone. The general consequence of 'no eggs to fertilise' was regularly seen in place of these.

Regarding infertility, the same pattern was seen, so very few consequential links were credited. However, many students described the process of IVF and insertion of the embryo into the uterus, to gain credit for a general consequence.

The use of progesterone to maintain the uterus lining was often muddled with contraception, and the idea of increased *chance* of implantation, or increased *chance* of fertilising an egg for the use of LH was rarely seen.

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