AQA GCSE Biology | 8461

SPECIFICATION POINT 4.2.2.6

The effect of lifestyle on some non-communicable diseases

Mark schemes and examiner comments

Tier	**Foundation**
Question groups	**42**
Available paper years	**2007–2025**

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.

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 01 · Mark scheme January 2007 | BLY1F | Original Q6 | Legacy

Question 6

	answers	extra information	mark
(a)	being overweight	do **not** accept fat unqualified allow BMI over 25	1
(b)(i)	rose by 8% / from 16% to 24% / by 50% / rapidly then more slowly		1 1
(ii)	any **two** reasonable suggestions e.g. less active more food / take-aways / fast food	accept e.g.s like fewer jobs / more cars / less physically demanding employment OWTTE	1 1
(c)(i)	high (blood) cholesterol	do **not** accept combination of 2 labels ignore references to LDL and HDL	1
(ii)	answer in range 8-17 inclusive		1
(iii)	some deaths related to more than one factor		1
total			8

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 02 · Mark scheme March 2007 | BLY1A | Original Q2 | Legacy

Two	**A**	arthritis	**2**
	B	diabetes	**1**
	C	heart disease	**3**
	D	high blood pressure	**4**

Answer 03 · Mark scheme March 2007 | BLY1A | Original Q5 | Legacy

Five	**A**	can be used to treat the symptoms of some diseases	**2**
	B	can lead to addiction to hard drugs	**3**
	C	contains carbon monoxide	**4**
	D	often leads to lack of self-control	**1**

Answer 04 · Mark scheme March 2007 | BLY1A | Original Q7 | Legacy

Seven	**3**	**1**	**3**	**4**

Answer 05 · Mark scheme June 2007 | BLY1A | Original Q9 | Legacy

Nine	**4**	**3**	**1**	**1**

Answer 06 · Mark scheme November 2007 | BLY1A | Original Q2 | Legacy

Two	**A**	cannabis	**1**
	B	carbon monoxide	**4**
	C	nicotine	**2**
	D	thalidomide	**3**

Answer 07 · Mark scheme November 2007 | BLY1A | Original Q3 | Legacy

Three	**A**	better than	**1**
	B	less than	**2**
	C	more than	**4**
	D	the same as	**3**

Answer 08 · Mark scheme November 2007 | BLY1A | Original Q7 | Legacy

Seven	**2**	**3**	**3**	**4**

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 09 · Mark scheme

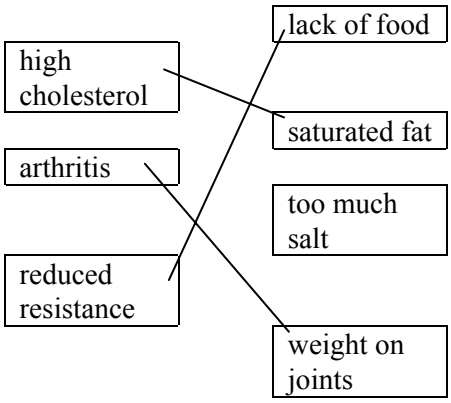
November 2007 | BLY1A | Original Q9 | Legacy

Nine	**1**	**1**	**4**	**2**

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 10 · Mark scheme January 2008 | BLY1F | Original Q4 | Legacy

Question 4

	answers	extra information	mark
(a)		all three correct = **3** marks two correct = **2** marks one correct = **1** mark extra line from a statement cancels the mark	3
(b)	any **two** from: • keeps us fit / healthy • reduces mass / weight / fat • metabolic rate increased • blood pressure reduced • heart disease less likely / heart healthy • arthritis less likely • reduces cholesterol • diabetes less likely		2
total			5

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 10 · Mark scheme

January 2008 | BLY1F | Original Q4 | Legacy

BLY1F

Answer 11 · Mark scheme

June 2008 | BLY1AP | Original Q3 | Legacy

Three	**A**	alcohol	**1**
	B	cannabis	**3**
	C	carbon monoxide	**2**
	D	nicotine	**4**

Answer 12 · Mark scheme

June 2008 | BLY1AP | Original Q8 | Legacy

Eight	**2**	**2**	**2**	**2**

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 13 · Mark scheme

June 2008 | BLY1F | Original Q1 | Legacy

question	answers	extra information	mark
1(a)(i)	eye		1
1(a)(ii)	nose		1
1(a)(iii)	skin		1
1(a)(iv)	tongue		1
1(b)	(lung) cancer	accept bronchitis / emphysema / heart disease / blood vessel disease	1
1(c)(i)	eg to ensure more people addicted to cigarettes / make cigarettes more addictive		1
1(c)(ii)	eg people might not buy the brand		1
Total			**7**

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 13 · Mark scheme

June 2008 | BLY1F | Original Q1 | Legacy

COMPONENT NUMBER: BLY1F

COMPONENT NAME: Science B / Biology

STATUS: Final

DATE: June 2008

Answer 14 · Mark scheme

November 2008 | BLY1AP | Original Q6 | Legacy

Six	**2**	**3**	**4**	**1**

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 15 · Mark scheme

January 2009 | BLY1F | Original Q8 | Legacy

question	answers	extra information	mark
8(a)(i)	does not contain drug / chemical	allow eg fake / sugar pill / dummy drug ignore control	1
8(a)(ii)	as control **or** to see if the effects are psychological **or** allows blind testing	allow 'to compare (with NRT)' ignore fair test	1
8(b)(i)	gum	allow gum placebo allow placebo	1
8(b)(ii)	high / highest number of participants / people **or** correct number given ie gum 16706, gum placebo 9319, placebo 16458		1
8(c)(i)	nasal spray		1
8(c)(ii)	highest <u>percentage</u> of people stopped / 24% stopped biggest difference between treatment and placebo	 allow 'highest by 4%' for **2** marks	1 1
Total			**7**

Answer 16 · Mark scheme

March 2009 | BLY1AP | Original Q2 | Legacy

Two	**A**	a diet low in fat	**3**
	B	a diet high in sugar	**1**
	C	a diet high in salt	**2**
	D	a diet high in saturated fat	**4**

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 17 · Mark scheme June 2009 | BLY1AP | Original Q1 | Legacy

Question	Key	
One	**A** kills bacteria	**2**
	B linked to lung disease	**1**
	C an addictive, illegal drug	**3**
	D relieves some disease symptoms	**4**

Answer 18 · Mark scheme June 2009 | BLY1AP | Original Q6 | Legacy

Six	**4**	**3**	**1**	**1**

Answer 19 · Mark scheme June 2009 | BLY1AP | Original Q7 | Legacy

Seven	**3**	**2**	**1**	**1**

Answer 20 · Mark scheme November 2009 | BLY1AP | Original Q4 | Legacy

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

Answer 21 · Mark scheme November 2009 | BLY1AP | Original Q5 | Legacy

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

Answer 22 · Mark scheme November 2009 | BLY1AP | Original Q8 | Legacy

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

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 23 · Mark scheme January 2010 | BLY1F | Original Q1 | Legacy

Question 1

question	answers	extra information	mark
1(a)(i)	eye	ignore sight	1
1(a)(ii)	nose / nostril	ignore smell	1
1(a)(iii)	tongue	allow mouth / taste buds ignore taste	1
1(b)(i)	stores more sugar / food / energy **or** sugar converted to fat	allow sugar builds up (in body) do **not** allow contains fat ignore more sugar in sugary cola ignore drank more sugar ignore sugar fattening	1
1(b)(ii)	arthritis / diabetes / (high) blood pressure / heart disease	ignore cancer allow colon cancer	1
1(c)(i)	0.5 / half	allow 0.45 – 0.55	1
1(c)(ii)	0.1	for correct answer with or without working if incorrect / no answer then evidence of correct method 0.9 + 0.8 + 1.4 – 3 gains **1** mark **or** evidence of 3.1 – wrong column from graph ie 0.5 / 2 / 5/ 6 gains **1** mark	2

Question 1 continues on the next page

4.2.2.6 The effect of lifestyle on some non-communicable diseases

BLY1F

Question 1 continued

question	answers	extra information	mark
1(c)(iii)	(high) blood pressure	allow heart disease / hypertension do **not** allow blocked arteries / cholesterol / diabetes / obesity	1
Total			**9**

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 23 · Mark scheme January 2010 | BLY1F | Original Q1 | Legacy

BLY1F

Answer 24 · Mark scheme March 2010 | BLY1AP | Original Q3 | Legacy

Three	**A**	blood	**2**
	B	heart	**3**
	C	joints	**4**
	D	liver	**1**

Answer 25 · Mark scheme June 2010 | BLY1AP | Original Q2 | Legacy

Two	**A**	80	3
	B	94	1
	C	130	4
	D	140	2

Answer 26 · Mark scheme November 2010 | BLY1AP | Original Q1 | Legacy

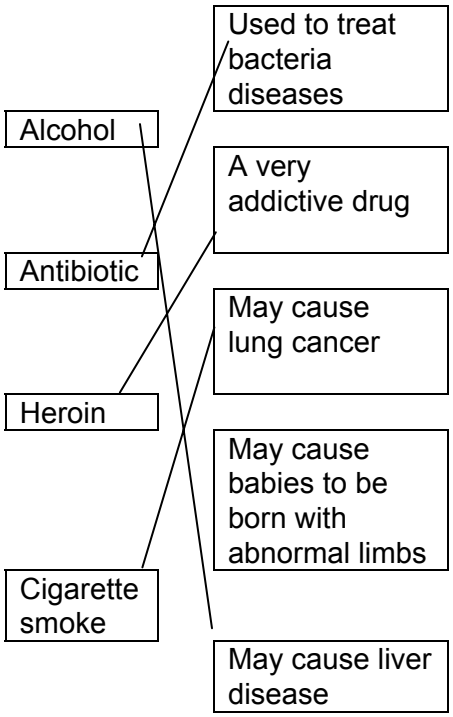
Question	Key		
One	**A**	arthritis	**1**
	B	diabetes	**2**
	C	high blood pressure	**4**
	D	irregular periods	**3**

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 27 · Mark scheme

January 2011 | BLY1F | Original Q3 | Legacy

Question 3

question	answers	extra information	mark
3(a)		**1** mark for each correct line mark each line from left hand box two lines from left hand box cancels mark for that box	4
3(b)(i)	ecstasy		1
3(b)(ii)	(no) any **one** correct difference eg Ecstasy in Class A but least harmful according to scientists	accept reference to figures	1
3(c)	for pleasure		1
Total			**7**

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 27 · Mark scheme January 2011 | BLY1F | Original Q3 | Legacy

BLY1F

Answer 28 · Mark scheme January 2011 | BLY1F | Original Q5 | Legacy

Question 5

question	answers	extra information	mark
5(a)	diabetes heart disease arthritis	deduct **1** mark for each box over 3 ticked	1 1 1
5(b)(i)	B		1
5(b)(ii)	D		1
5(c)	1/2 **or** equivalent fraction **or** half **or** 50%		1
5(d)(i)	C		1
5(d)(ii)	any **two** from: • least / low (saturated) fat • low / least salt • least energy / least kilojoules	ignore unqualified references to figures ignore references to sugar	2
Total			**9**

BLY1F

Answer 29 · Mark scheme June 2011 | BLY1AP | Original Q6 | Legacy

Six	**2**	**3**	**3**	**4**

Answer 30 · Mark scheme June 2011 | BLY1AP | Original Q7 | Legacy

Seven	**4**	**3**	**2**	**4**

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 31 · Mark scheme

January 2012 | BL1FP | Original Q6 | Legacy

Question 6

question	answers	extra information	mark
6(a)(i)	addictive	allow addicting / addict / addicted / addiction or similar allow phonetic spelling do **not** accept **/** additive / addition	1
6(a)(ii)	junction / gap / space between neurones	allow nerve cells / nerves for neurones allow idea where neurones / nerve cells / nerves meet / join	1
6(b)(i)	tablet with no drug	accept answers that convey this idea eg fake / dummy / sugar pill allow injection with no drug ignore drugs that don't work.	1
6(b)(ii)	for comparison	accept to see if drug / it works allow to see psychological effect **or** make sure, it is not all in the mind allow as a control ignore 'to make test fair / unbiased'	1
6(b)(iii)	Neither doctors nor volunteers		1

Question 6 continues on the next page . . .

BL1FP

Question 6 continued

question	answers	extra information	mark
6(b)(iv)	any **two** from: • age (range) • sex / gender (mix) • previous smoking habits **or** eg number smoked (before trial) **or** length of time smoked • number in the group • other drugs being taken **or** general health **or** height / weight / BMI / lifestyle / fitness	ignore factors already controlled ignore reference to all smokers **or** all want to give up	2
6(c)	higher percentage / number of smokers who had stopped smoking (than Drug B)	answers must refer to data and be comparative allow best results / most effective ignore best drug unqualified ignore references to 12 weeks / 1 year	1
Total			**8**

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 31 · Mark scheme

January 2012 | BL1FP | Original Q6 | Legacy

BL1FP

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 32 · Mark scheme

June 2012 | BL1FP | Original Q2 | Legacy

Question 2

question	answers	extra information	mark
2 (a)(i)	7500	ignore units	1
2 (a)(ii)	any **two** from: (differences in) • age • gender / sex • activity / amount of exercise • metabolism / metabolic rate • genetic differences • body weight / mass / size / physique • pregnancy • proportion of muscle to fat	if examples given they must be correct allow job / lifestyle ignore fitness / health / medication allow BMR allow BMI	2
2 (b)	**A** more energy taken in than used	if box empty, allow in explanation accept more food taken in than used allow correct numbers if comparative ignore incorrect numbers if comparison correct	1 1

Question 2 continues on the next page . . .

4.2.2.6 The effect of lifestyle on some non-communicable diseases

BL1FP

Question 2 continued

question	answers	extra information	mark
2 (c)	eat less (food / carbohydrates / fat / calories) exercise (more) **or** go to the gym	accept a medical treatment such as gastric band / slimming pills / liposuction ignore balanced / healthy / diet allow go to weight watchers etc. ignore burn off more	1 1
Total			**7**

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 32 · Mark scheme June 2012 | BL1FP | Original Q2 | Legacy

BL1FP

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 33 · Mark scheme

Question 5

question	answers	extra information	mark
5(a)	mental (illness)	accept specific mental illnesses such as depression, paranoia schizophrenia or dementia allow brain damage do **not** accept cancer	1
5(b)(i)	evidence on graph of attempt to continue line from 2001 to 2014 15	range at 2014 from 13 to 16 inclusive accept any value between 13 and 16 consistent with attempt at straight line if there is no line accept only 15	1 1
5(b)(ii)	no because changing to Class C did not affect trend OR trend / use already falling before the change OR use higher when class B	only award this mark if there is an attempt at an explanation	1 1
Total			**5**

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 33 · Mark scheme

January 2013 | BL1FP | Original Q5 | Legacy

BL1FP

4.2.2.6 The effect of lifestyle on some non-communicable diseases

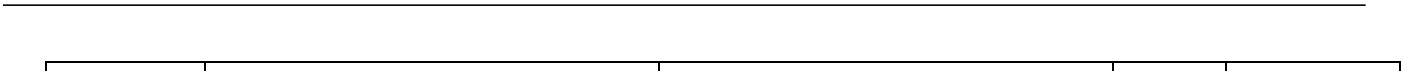
Answer 34 · Mark scheme June 2015 | BL1FP | Original Q2 | Legacy

Question	Answers	Extra information	Mark	AO / Spec. Ref.
2(a)(i)	64		1	AO2 1.1
2(a)(ii)	36	allow e.c.f from (a)(i) i.e. 100 – answer given in (a)(i)	1	AO2 1.1
2(a)(iii)	any **one** from: • only considers 16-year-olds • only about some / 5 countries	ignore lack of evidence allow does not refer to all ages allow does not refer to all countries	1	AO3 1.1
2(b)	the more exercise done the healthier a person is	allow the more exercise done the higher the health rating allow the less exercise done the lower the health rating	1	AO3 1.1.1e
2(c)	having a high cholesterol level		1	AO1 1.1.1d
2(d)(i)	antibodies		1	AO1 1.1.2c/d/e
2(d)(ii)	antibiotics		1	AO1 1.1.2i
Total			**7**	

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 34 · Mark scheme

June 2015 | BL1FP | Original Q2 | Legacy



4.2.2.6 The effect of lifestyle on some non-communicable diseases

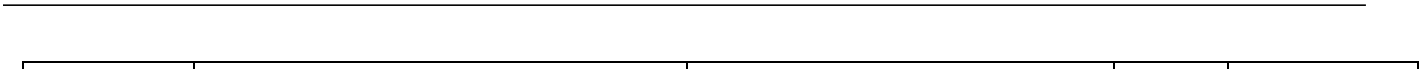
Answer 35 · Mark scheme June 2016 | BL1FP | Original Q7 | Legacy

Question	Answers	Extra information	Mark	AO / Spec. Ref.
7(a)(i)	legal, recreational drugs		1	AO1 1.3.1e
7(a)(ii)	any **one** from: • dependence / addiction • withdrawal (symptoms) or described	 allow reliance eg headache / sickness / nausea ignore side effects alone	1	AO1 1.3.1h
7(b)(i)	idea of not part of the drug company **or** it is another company	not biased can be accepted for either part bi or bii, but not both	1	AO2 1.3.1a
7(b)(ii)	idea of so they will not be biased	allow results will be trustworthy	1	AO3 1.3.1a
7(b)(iii)	no / reduced feeling of pleasure from alcohol (so) less likely to drink alcohol	allow brain less sensitive to alcohol allow so easier to stop (drinking alcohol)	1 1	AO3 1.3.1
7(c)(i)	higher % **or** more boys (than girls) drink beer / lager / cider higher % **or** more girls (than boys) drink spirits / alcopops / wine	allow boys drink more beer / lager / cider allow girls drink more spirits / alcopops / wine allow valid descriptions using % figures	1 1	AO2 1.3.1
7(c)(ii)	any **one** from: • only 100 boys were surveyed • only done on 15-year-olds • no data on the table about boys that don't drink alcohol • data only about UK • boys may have lied about alcohol consumption	 allow small sample may not be representative allow not done on all ages allow none of the bars are 100% or highest bar is 88%	1	AO3 1.3.1
Total			**9**	

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 35 · Mark scheme

June 2016 | BL1FP | Original Q7 | Legacy



4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 36 · Mark scheme June 2018 | 8461/1F | Original Q3

Question	Answers	Extra information	Mark	AO / Spec. Ref.
03.1	(A) stomach		1	AO1 4.2.2.1
	(B) small intestine	allow ileum ignore intestine unqualified	1	
	(C) liver		1	
03.2	soluble	this order only	1	AO1 4.2.2.1
	catalyse		1	
	denatured		1	
03.3	amino acids		1	AO1 4.2.2.1
03.4	any **one** from: • for growth • for repair / replacement (of cells / tissues / organs)	allow for enzymes / hormones / antibodies allow to strengthen bones ignore for energy	1	AO1 4.2.2.1
03.5	stomach		1	AO1 4.2.2.1

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 36 · Mark scheme

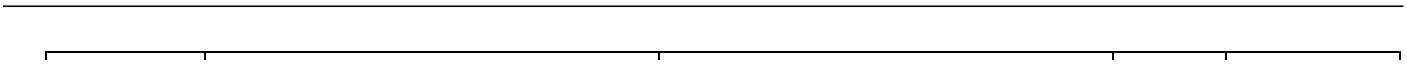
June 2018 | 8461/1F | Original Q3

Question	Answers	Mark	AO / Spec. Ref.
03.6	**Level 2:** Scientifically relevant facts, events or processes are identified and given in detail to form an accurate account.	3–4	AO1 4.2.2.1
	Level 1: Facts, events or processes are identified and simply stated but their relevance is not clear.	1–2	
	No relevant content	0	
	Indicative content • grinding up the food • add Biuret reagent (allow $CuSO_4$ and NaOH) to food (sample) • protein turns solution (from blue) to purple / lilac • wear goggles to protect eyes • clean up spills immediately • Biuret / NaOH is an irritant / corrosive / poisonous for **level 2** a reference to Biuret, a positive result and reason for a safety precaution is required		
03.7	fat	1	AO1 4.2.2.1
03.8	type 2 diabetes	1	AO1 4.2.2.6
Total		**15**	

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 36 · Mark scheme

June 2018 | 8461/1F | Original Q3



4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 37 · Mark scheme June 2018 | 8461/2F | Original Q5

Question	Answers	Extra information	Mark	AO / Spec. Ref.
05.1	pancreas		1	AO1 4.5.3.2
05.2	liver glycogen	in this order	1 1	AO1 4.5.3.2
05.3	would be digested / broken down (by enzymes / protease / pepsin / acid or to amino acids)	allow denatured (by acid)	1	AO2 4.2.2.1 4.5.3.2
05.4	use of 14.2 **and** 6.8 7.4	an answer of 7.4 scores **2** marks allow an answer of 7.2 or 7.3 (using 14.1 and / or 6.9) for **1** mark	1 1	AO2 4.5.3.2 AO3 4.5.3.2
05.5	any **one** from: • (person A's) results are higher • (A) increases for a longer time **or** peaks later • (A) takes longer to decrease **or** takes longer to return to normal	allow converse comparisons with person B as the subject ignore A peaks at a higher level than B allow other correct comparisons allow a description using pairs of figures from graph at a given time	1	AO2 4.5.3.2

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 37 · Mark scheme

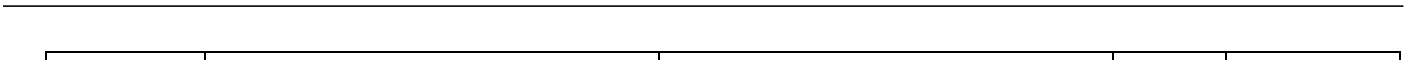
June 2018 | 8461/2F | Original Q5

Question	Answers	Extra information	Mark	AO / Spec. Ref.
05.6	a negative correlation		1	AO2 4.5.3.2
05.7	less carbohydrate / sugar / fat in diet **or** lose weight **or** maintain a healthy weight (more) exercise	allow go on a diet allow eat less allow balanced / healthy diet ignore diet unqualified allow examples of exercise	1 1	AO1 4.5.3.2
Total			**10**	

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 37 · Mark scheme

June 2018 | 8461/2F | Original Q5



4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 38 · Mark scheme November 2021 | 8461/1F | Original Q6

06.1	trachea		1	AO2 4.2.2.2
06.2	any **two** from: • only one air space (per balloon) **or** alveoli not represented • blood vessels / capillaries not represented • bronchioles not represented • glass tube not flexible (like trachea / bronchi) • bell jar does not move during breathing (like ribs) • ribs have gaps between them • rib cage contains muscles • pleural cavity not represented	do **not** accept bronchi not represented	2	AO3 4.2.2.2
06.3	any **two** from: • speed (of treadmill) • type of exercise **or** all were running • (biological) sex **or** all male • all were non-smokers • time spent running	allow ran for 8 minutes ignore reference to time interval for counting breaths	2	AO2 4.4.2.2
06.4	0 minutes = 20 8 minutes = 42 (42 - 20) ÷ 20 × 100 **or** 22 ÷ 20 × 100 110 (%)	allow value for 8 minutes in the range 41.5 to 42.5 allow correct substitution from incorrect graph readings (i.e. ±1 small square) at 0 minutes and / or 8 minutes allow correct calculation from incorrect graph readings from previous step	1 1 1	AO2 4.4.2.2

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 38 · Mark scheme

06.5	to get more oxygen (into the blood) for use in respiration **or** for releasing energy (for muscle contraction) **or** to remove more carbon dioxide (1) produced in respiration (1)	allow using more oxygen (in muscles) allow to reduce anaerobic respiration do **not** accept produces / makes / creates energy	1 1	AO2 4.4.2.2 4.4.2.1
06.6	any **one** from: • heart / pulse rate • depth / volume of breathing • volume of sweat • body temperature	allow heart beat per minute allow amount of sweat allow body mass / measurement	1	AO3 4.4.2.2
06.7	any **one** from: • (lung) cancer • increased blood pressure • lung disease • low birth weight in babies of mothers who smoke • increased risk of heart / cardiovascular disease	allow named example of lung disease e.g. asthma allow persistent cough ignore cough unqualified	1	AO1 4.2.2.6
Total			**12**	

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 38 · Mark scheme

November 2021 | 8461/1F | Original Q6

Question	Answers	Extra information	Mark	AO / Spec. Ref.

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 39 · Mark scheme November 2021 | 8461/1F | Original Q9

09.1	normal		1	AO2 4.2.2.5 4.2.2.6
09.2	$92 \div 1.71^2$ 31.46(…) 31.5	 allow correctly calculated value using 92 ÷ 1.71	1 1 1	AO2 4.2.2.5 4.2.2.6
09.3	any **two** from: • the higher the BMI (category) the lower the number of years living in good health • the higher the BMI (category) the higher the number of years living in bad health • the higher the BMI (category), the lower total life expectancy	allow 'more overweight' or 'more obese' for higher BMI category throughout allow the lower the BMI (category) the higher the number of years living in good health allow the lower the BMI (category) the lower the number of years living in bad health allow the lower the BMI (category), the higher total life expectancy if no other marks awarded, allow for **1** mark idea that as BMI increases, quality of life decreases	2	AO2 4.2.2.5 4.2.2.6

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 39 · Mark scheme

November 2021 | 8461/1F | Original Q9

09.4	costs the NHS / UK health service / Government / hospitals more money (because need to pay for) additional surgery / medication / hospital stay to treat stroke / diabetes **or** more time off work (if in hospital / unwell) (1) (so) employer / Government have to give financial support (1)	 allow other correct named conditions e.g. heart attack / immobility / disability / arthritis allow more people unable to work allow (so) decreased productivity (in workplace)	1 1	AO3 4.2.2.6
09.5	allow any **one** from: • movement issues • loss of job / income • disability • mental health impact of lack of movement **or** mental health impact of pain • need to visit the doctor / take medication regularly • may need surgery	 allow example of movement issue	1	AO3 4.2.2.6
09.6	<u>type 2</u> diabetes CVD / CHD **or** heart attack / disease **or** stroke	 allow atherosclerosis allow **two** named vascular conditions for **2** marks from heart attack **or** stroke **or** high blood pressure **or** high (blood) cholesterol allow cancer allow liver disease	1 1	AO1 4.2.2.4 4.2.2.6
Total			**11**	

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 40 · Mark scheme

June 2022 | 8461/2F | Original Q10

Question 10

Question	Answers	Extra information	Mark	AO / Spec. Ref.
10.1	an answer in the range 1.1 to 2(.0) (hours)		1	AO2 4.5.3.2

Question	Answers	Extra information	Mark	AO / Spec. Ref.
10.2	*effect* : lowered *explanation*: glucose taken in **or** glucose converted to glycogen **or** glucose used in respiration by cells / liver / muscles		1 1 1	AO1 4.5.3.2

Question	Answers	Extra information	Mark	AO / Spec. Ref.
10.3	underweight		1	AO3 4.5.3.2

Question	Answers	Extra information	Mark	AO / Spec. Ref.
10.4	(from) 67.5 (kg to) 90 (kg)	allow in the range 67 to 68 (kg) for 67.5 (kg) allow in the range 90 to 90.5(kg) for 90 (kg) allow from 90 (kg to) 67.5 (kg)	1	AO2 4.5.3.2

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 40 · Mark scheme

June 2022 | 8461/2F | Original Q10

Question	Answers	Extra information	Mark	AO / Spec. Ref.
10.5	(person **C** has) higher glucose (than mean)	answers must be comparative allow comparison of higher glucose using numbers allow (person **C**'s) glucose is too high	1	AO3 4.5.3.2
	(person **C** has) higher insulin (than mean)	allow comparison of higher insulin using numbers allow (person **C**'s) insulin is too high do **not** accept (person **C** has) higher cholesterol ignore unprocessed data	1	

Question	Answers	Extra information	Mark	AO / Spec. Ref.
10.6	(more) exercise	allow example of (more) exercise	1	AO1 4.5.3.2
	eat less carbohydrate / sugar **or** eat a low carbohydrate diet	allow eat less fat allow eat a carbohydrate controlled diet if no other marks awarded allow **1** mark for lose weight **or** maintain healthy weight **or** eat less **or** eat fewer calories ignore references to healthy / balanced diet **or** diet unqualified	1	

Total Question 10		10

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 41 · Mark scheme

June 2024 | 8461/1F | Original Q7

Question 7

Question	Answers	Extra information	Mark	AO / Spec Ref.
07.1	arteries		1	AO1 4.2.2.2 4.2.2.4

Question	Answers	Extra information	Mark	AO / Spec Ref.
07.2	pushes / moves blood to get oxygen around the body	 allow description of getting oxygen around the body, such as through blood vessels **or** to get oxygen to a named organ do **not** accept to get oxygen to the lungs ignore reference to restarting the heart ignore reference to the pacemaker	1 1	AO2 4.2.2.2 4.4.2.1

Question	Answers	Extra information	Mark	AO / Spec Ref.
07.3	provides oxygen (for respiration)	allow idea of carbon dioxide triggering breathing to restart	1	AO2 4.2.2.2 4.4.2.1

Question	Answers	Extra information	Mark	AO / Spec Ref.
07.4	statin(s)	allow named statin	1	AO1 4.2.2.4

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 41 · Mark scheme June 2024 | 8461/1F | Original Q7

Question	Answers	Extra information	Mark	AO / Spec Ref.
07.5	(stent) opens / widens (blocked blood) vessel	allow (stent) keeps (blocked blood) vessel open allow a description of the blood vessel being opened ignore type of blood vessel ignore unblocks (blood) vessel	1	AO1 4.2.2.4
	to allow (more) blood to flow **or** to allow (more) glucose / oxygen to the heart (cells / tissue / muscle)		1	

Question	Answers	Extra information	Mark	AO / Spec Ref.
07.6	any **two** from: • smoking increases the (%) risk of **all** types of (cardiovascular) disease • smoking increases the (%) risk of having (disease) **H** more than any other type of (cardiovascular) disease • smoking increases the (%) risk of having (disease) **E** less than any other type of (cardiovascular) disease	ignore smoking causes (cardiovascular) disease allow not smoking decreases the risk of **all** types of (cardiovascular) disease allow if you smoke, you are **most** likely to get (disease) **H** allow if you smoke, you are **least** likely to get (disease) **E** allow a comparison of the effect of smoking on the risk of two (cardiovascular) diseases allow two comparisons of the effect of smoking on the risk of two (cardiovascular) diseases for **2** marks	2	AO3 4.2.2.6

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 41 · Mark scheme

June 2024 | 8461/1F | Original Q7

Question	Answers	Extra information	Mark	AO / Spec Ref.
07.7	*y*-axis labelled 'Percentage / % increase in risk (compared to people who have never smoked)'		1	AO2 4.2.2.6
	correct scale of 1 cm = 5% on *y*-axis		1	
	all bars plotted correctly	allow a tolerance of ±½ small square ignore bars touching ignore width of bars	1	
	all bars correctly labelled		1	

Question	Answers	Extra information	Mark	AO / Spec Ref.
07.8	any **one** from: • poor diet	ignore obesity allow descriptions of poor diet eg diet high in (saturated) fat / cholesterol ignore diet unqualified	1	AO1 4.2.2.6
	• lack of exercise	allow descriptions of lack of exercise allow high alcohol intake allow other correct lifestyle factors such as having a stressful job		

Total Question 7	14

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 42 · Mark scheme

June 2025 | 8461/1F | Original Q7

Question 7

Question	Answers	Extra information	Mark	AO / Spec Ref.
07.1	type 2 diabetes	ignore diabetes unqualified do **not** accept type 1 diabetes allow high blood pressure allow (coronary) heart disease **or** CHD allow cardiovascular disease **or** CVD allow stroke allow heart attack allow (osteo)arthritis allow cancer allow sleep apnoea allow liver disease allow other correct diseases ignore high cholesterol ignore heart failure	1	AO1 4.2.2.6 4.2.2.7

Question	Answers	Extra information	Mark	AO / Spec Ref.
07.2	correct scale **and** *y*-axis labelled 'mean obesity rate in arbitrary units'		1	AO2 4.2.2.6
	all points plotted correctly	allow a tolerance of ± ½ small square allow 3 or 4 correct plots for **1** mark ignore letters	2	
	line of best fit drawn	ignore line extended beyond plotted points ignore line joined point to point with straight lines	1	

Question	Answers	Extra information	Mark	AO / Spec Ref.
07.3	scatter (diagram / graph)	allow scattergram	1	AO2 4.2.2.6

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 42 · Mark scheme

Question	Answers	Extra information	Mark	AO / Spec Ref.
07.4	positive correlation		1	AO2 4.2.2.6

Question	Answers	Extra information	Mark	AO / Spec Ref.
07.5	(30 °C) (iodine solution remains yellow-brown because) starch is not present	allow (iodine solution remains yellow-brown because) all / the starch had been broken down	1	AO3
	(because) amylase / enzyme broke starch down	allow (because) the amylase / enzyme is active / working allow (because this is close to) the optimum / best temperature for amylase / enzyme	1	AO2
	(90 °C) (iodine solution blue-black because) starch was (still) present	allow (iodine solution blue-black because) starch was not broken down allow (because) the amylase / enzyme had no effect on starch	1	AO3
	(because) the amylase / enzyme has denatured	allow description of denaturation allow amylase / enzyme is destroyed / damaged do **not** accept amylase / enzyme has been killed	1	AO2 4.2.2.1 RPA5

Question	Answers	Extra information	Mark	AO / Spec Ref.
07.6	test more temperatures between 10 °C and 60 °C		1	AO3 4.2.2.1 RPA5

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 42 · Mark scheme

June 2025 | 8461/1F | Original Q7

Question	Answers	Mark	AO / Spec Ref.
07.7	<table><tr><th>Protease enzyme</th><th>Optimum pH</th><th>Organ where enzyme is active</th></tr><tr><td></td><td></td><td>stomach</td></tr><tr><td></td><td></td><td><u>small</u> intestine allow ileum / duodenum</td></tr></table>	1 1	AO2 4.2.2.1

Total Question 7	14

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 40 · Examiner comments

June 2022 | 8461/2F | Original Q10

Question 10

This was the final common question on the topic of insulin and blood glucose, and the relationship between obesity and Type 2 diabetes.

10.1 Over two-thirds of students selected appropriate times from the graph in **Figure 13** for when insulin would be expected to be in high concentration. The most common answers given were around the time of the peak in blood glucose concentration. Those students who gave incorrect times frequently chose 2.5 hours, the time when blood glucose was at a minimum. A number of students gave answers such as 5.9 or 6, showing that they had been reading the wrong scale, giving the peak blood glucose concentration as the answer. For possible future reference, students should be aware of the difference, for example, between 1:40 and 1.4, when referring to time – in this particular question either format was acceptable as it was sufficient to indicate a value within the correct range.

10.2 There was a low number of very detailed correct answers to explain the effect of insulin on blood glucose, usually referring to the *liver* and *glycogen*. Occasionally, from those students who attempted it, glycogen was misspelt in such a way that it could be confused with glucagon. Whether blood glucose concentration would be increased or decreased was given in similar proportions; however many appeared to misunderstand what was required on the 'effect' line.
Many students appeared to have little understanding of diabetes, with fewer than one third scoring any of the three marks available.

10.3 and **10.4** These questions involved interpretation of the height – body mass graph in **Figure 14**. Nearly 70 percent of students correctly deduced that person **A** was underweight, but only around one-third could give sufficiently precise values (68 to 90) for the range of healthy weights for person **B**, given a height of 1.9m, even though this fell on a major gridline. Although some tolerance was allowed, many gave values just outside those acceptable, such as 66 or 69 at the lower end and 89 or 91 at the upper end. Weaker students appeared to draw numbers from a variety of other places on the graph.

10.5 This question involved the selection of appropriate data from a simple table that compared blood concentratons of cholesterol, glucose and insulin in an obese person with mean values for people who did not have Type 2 diabetes. Just over a quarter of students were able to point out that person **C** had *higher* concentrations of both glucose and insulin. Simply quoting figures from the table, without a comparison, was inadequate, as was the use of a non-comparative term such as 'high' concentration. Any mention of cholesterol, which was quite common, was deemed inappropriate – the question tested the selection of *relevant* data.

10.6 The majority of students knew that exercise was a means of reducing the chance of developing Type 2 diabetes. Most also knew that 'diet' was relevant but many answers, such as 'a heathy diet' or 'a balanced diet' were inadequate; it was necessary to state that the diet contained less sugar / carbohydrate / fat or involved weight loss. Thus fewer than one in five scored both marks.

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Use of statistics

Statistics used in this report may be taken from incomplete processing data. However, this data still gives a true account on how students have performed for each question.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the Results Statistics page of the AQA Website.

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 41 · Examiner comments

June 2024 | 8461/1F | Original Q7

Question 7 (standard demand)

07.1 74% of students answered this question correctly.

07.2 Half of the students achieved one mark in this question, with 12% gaining full marks. Many students believed that the principle reason for putting pressure on the heart was to restart the heart first and then to get the blood flowing generally to the lungs to get rid of carbon dioxide and to collect oxygen.

07.3 As was evident in answers to question 07.2, it was clear that many students are confused about the relationship between the heart moving blood through the body and the mechanism of breathing, and many believe that there is a direct dependency of one on the other. As a result, just over half of students gained the mark in this question. Responses were seen that suggested the inflation of the lungs started the heart beating again. Other answers which gained no credit simply repeated the question wording and added no value, by saying that the person's lungs would then 'get air'.

07.4 18% of students were able to recall the term 'statins' from the specification with a number giving answers such as 'blood thinners' or 'anti-cholesterol drugs'. 18% of students left this question blank.

07.5 A third of students achieved full marks in this question, with just over 20% achieving one mark. For the award of the first marking point, the name of the type of blood vessel was ignored as this had already been asked for in question 07.1. Various descriptions of the vessel being opened were acceptable such as it was 'expanded' or the fat was 'pushed to the sides'. Answers referring to 'unblocking' or 'clearing' the vessels, however, were not credited. A few students incorrectly suggested that stents kept the 'valves' or 'heart chambers' open. References to stents 'stopping blood clotting' or to 'keeping the heart beating' were not credited for the second marking point, but were commonly seen.

07.6 80% of students gained no credit in this question and found making conclusions based on the results in Table 5 very difficult. The data showed to what extent the percentage risk of getting four different cardiovascular diseases increased as a result of smoking when compared with people who had never smoked. As a result, all conclusions had to reflect both the increased risk and its association with smoking. They also needed to be comparative, either on the basis of one disease over all others, by using words such as 'most' or 'least', or on the basis of one disease over one other by using words such as 'more' or 'less'. Answers invariably failed to match all of these requirements. Some students also mistakenly believed that the results reflected the 'risk' or 'danger' of the diseases rather than the risk of 'developing' them. Other answers revealed the misconception by some that the letters E to H referred to individual people rather than to the different diseases.

07.7 Students' graph drawing skills were generally good, with 54% of students achieving full marks and 28% achieving three marks. Just 1% of students gained no credit at all. The most commonly omitted feature was the *y*-axis label, and some students truncated their label so much as to omit the reference to 'risk', which was not creditworthy. When marking on their scale, a few students lost track with the middle numbers on the scale they gave.

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4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 41 · Examiner comments June 2024 | 8461/1F | Original Q7

07.8 53% of students gained credit in this question. The most common incorrect answers were those that lacked qualification, such as references to 'drinking alcohol' or to 'eating fatty foods' which needed the added idea of consumption of these being 'high'. Obesity was a common incorrect answer, as it is not a lifestyle factor.

Answer 42 · Examiner comments June 2025 | 8461/1F | Original Q7

Question 7 (standard demand)

07.1 Half of all students gave a creditworthy answer to this question, very often by referring to heart disease. Heart failure or heart problems were considered too vague and were unable to gain credit. The most frequently seen error was one of omission when students simply suggested diabetes without the qualification of 'Type 2'.

07.2 Over 50% of students gained at least 3 marks in this question. MP1 was occasionally missed due to labelling the axis with 'y' only, omitting to include 'arbitrary units' or the use of an incorrect scale. Gaining credit for correct plots was a little more challenging but, with the allowed tolerance, the majority of students were awarded at least 1 mark. It was occasionally difficult to see which points were chosen because they were either far too small or concealed by a very thick line of best fit. Students should ideally be advised to give clear crosses for plotted points and to draw graphs in pencil so that alterations can be made without ambiguity. MP4 was usually awarded for a straight line which went through/between the majority of plotted points, regardless of whether some of these had been incorrect. The most common error was to draw the straight line of best fit through the origin. It was rare to see students drawing straight lines between individual points but, where this alone was given, they were unable to achieve MP4.

07.3 Just over 50% of students answered this question correctly. Responses which could not gain credit included 'dot', 'line' or 'relationship graph', or references to conclusions in respect of correlations shown.

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Answer 42 · Examiner comments

June 2025 | 8461/1F | Original Q7

07.4 80% of students gained credit in this question.

07.5 Nearly 60% of students found this question difficult and did not pick up any marks. A lack of acknowledgement of the command word (explain) meant that a large number of answers were seen that simply restated the results in terms of the colour of the iodine solution without any attempt at an explanation. Many students confused the results they were seeing when attempting to explain why the colour changes had happened - a significant number read that the starting colour of iodine solution was yellow-brown and then, noting that the only result showing this same colour was at 30 °C, went on to suggest that at this temperature, there had either been no reaction at all or that the result was anomalous. Other errors included:

- the iodine test showing the presence or absence of both starch and sugars.
- amylase, rather than starch, being broken down.
- denaturation occurring at 30 °C
- iodine solution being responsible for any breakdown that occurred.

Vague suggestions that 'temperature affected amylase' or that at 90 °C 'amylase did not work', with no reference to starch or to denaturation, gained no credit.

07.6 Just over 30% of students gained credit in this question.

07.7 Nearly 10% of students scored full marks in this question, with nearly 30% scoring one mark, most commonly MP1. A wide range of answers was seen, covering organs outside the digestive system as well as within it. A substantial number of students gave the answers the wrong way around and the 'pancreas' was often chosen mistakenly in the context of being a site of production, rather than activity of, protease enzymes. Unqualified references to 'intestine' were frequently seen but were not credited.