AQA GCSE Biology | 8461

SPECIFICATION POINT 4.3.1.2

Viral diseases

Mark schemes and examiner comments

Tier	**Higher**
Question groups	**19**
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.

4.3.1.2 Viral diseases

Answer 01 · Mark scheme

March 2007 | BLY1A | Original Q1 | Legacy

One	**A**	ear	**4**
	B	eye	**2**
	C	nose	**3**
	D	skin	**1**

4.3.1.2 Viral diseases

Answer 02 · Mark scheme

Question 5

	answers	extra information	mark
(a)	any **three** from: • vaccine is inactive / dead form of (pathogen) • stimulates antibody production • stimulates antitoxin production • by white cells • antibodies kill (pathogen) • antitoxins neutralise poisons • antibodies quickly produced on reinfection • reference to ingestion by white cells	allow antigens ignore antibodies remain in blood	3
(b)(i)	(no) any **two** from • sample size small / only 12 • conclusion based on hearsay from parents • only 8 parents linked autism to MMR • no control used		2
(b)(ii)	(yes) being paid by parents / lawyers		1
total			6

4.3.1.2 Viral diseases

Answer 02 · Mark scheme

January 2008 | BLY1H | Original Q5 | Legacy

BLY1H

Answer 03 · Mark scheme

June 2008 | BLY1AP | Original Q8 | Legacy

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

4.3.1.2 Viral diseases

Answer 04 · Mark scheme

January 2009 | BLY1H | Original Q2 | Legacy

question	answers	extra information	mark
2(a)	antibodies	allow antitoxins / memory cells do **not** allow antigens	1
	immune	ignore protection allow resistant	1
2(b)(i)	fell		1
	numerical qualification to zero / nothing / by 100%	allow stopped in 1995	1
2(b)(ii)	(no) % vaccination fell **or** when no vaccination	ignore circle	1
	but autism numbers did not fall / stayed high / increased **or** '(yes) might support it if time lag between vaccination and autism symptoms' / 'time lag for diagnosis' (1) 6 year time lag quantified (1)		1
Total			**6**

4.3.1.2 Viral diseases

Answer 04 · Mark scheme

January 2009 | BLY1H | Original Q2 | Legacy

COMPONENT NUMBER: BLY1H

COMPONENT NAME: Science B / Biology

STATUS: Final

DATE: January 2009

Answer 05 · Mark scheme

March 2009 | BLY1AP | Original Q8 | Legacy

Eight	**3**	**3**	**1**	**2**

Answer 06 · Mark scheme

June 2009 | BLY1AP | Original Q4 | Legacy

Four	**2**	**1**	**2**	**1**

4.3.1.2 Viral diseases

Answer 07 · Mark scheme

June 2009 | BLY1H | Original Q4 | Legacy

Question 4

question	answers	extra information	mark
4(a)	any **two** from • live inside / infect body cells • difficult for drugs to enter (body) cells / drug would kill (body) cell • antibiotics ineffective against viruses • viruses mutate **frequently**		2
4(b)(i)	420	correct answer with **or** without working if answer incorrect evidence of 'number of deaths' × 7 **or** 60 seen gains **1** mark ignore 6 000 000	2
4(b)(ii)	any **three** from: • virus / flu mutates • people no longer / not immune • white blood cells / memory cells / immune system do not recognise virus • relevant reference to antibodies / antigens • current vaccine ineffective **or** no vaccine available then **or** takes time to develop new vaccine • conditions less hygienic / lack of hygiene • people in poor health (following world wars)	ignore resistance allow no tamiflu / anti-viral drugs allow people had 'weak' immune system	3
Total			**7**

4.3.1.2 Viral diseases

Answer 07 · Mark scheme

June 2009 | BLY1H | Original Q4 | Legacy

BLY1H

Answer 08 · Mark scheme

November 2009 | BLY1AP | Original Q8 | Legacy

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

4.3.1.2 Viral diseases

Answer 09 · Mark scheme

Question 6

question	answers	extra information	mark
6(a)	produces toxins / damage cells / reproduce rapidly **or** reproduce in cells	ignore invade cells	1
6(b)	any **three** from: • TV crew immune / Indians not immune / Indians have weak(er) immune system • TV crew had / produced antibodies / Indians had no antibodies **or** antibody production faster in TV crew • TV crew had previous exposure to flu / had been vaccinated **or** Indian tribe had no previous exposure to flu / had not been vaccinated • Indians caught disease from TV crew **or** TV crew were carriers *(*of the virus*)*	ignore resistant allow immunised	3
Total			**4**

4.3.1.2 Viral diseases

Answer 09 · Mark scheme January 2010 | BLY1H | Original Q6 | Legacy

BLY1H

Answer 10 · Mark scheme March 2010 | BLY1AP | Original Q3 | Legacy

Three	**3**	**4**	**4**	**1**

4.3.1.2 Viral diseases

Answer 11 · Mark scheme

Question 3

question	answers	extra information	mark
3(a)	worldwide **or** several countries (outbreak)	ignore affects large numbers of people	1
3(b)	any **three** from • new strain of flu / virus changes / virus different • vaccination not effective **or** new vaccine not yet developed • antiviral drugs not effective / not yet developed • *people* not immune to it • virus not recognised by white blood cells / antibodies **or** antibodies / antitoxins not effective • people / animals travel between countries / abroad spreading infection	ignore mutation allow resistant / immune to vaccine allow drugs / treatment not effective do **not** allow antibiotics not effective allow people not resistant accept no antibodies / antitoxins ignore white blood cells / antibodies fighting off	*3*
Total			**4**

4.3.1.2 Viral diseases

Answer 11 · Mark scheme June 2010 | BLY1H | Original Q3 | Legacy

BLY1H

Answer 12 · Mark scheme November 2010 | BLY1AP | Original Q4 | Legacy

Four	**3**	**2**	**4**	**2**

Answer 13 · Mark scheme March 2011 | BLY1AP | Original Q4 | Legacy

Four	**4**	**2**	**1**	**4**

4.3.1.2 Viral diseases

Answer 14 · Mark scheme

Question 2

question	answers	extra information	mark
2(a)	both lead to reduction / fall (in measles cases)	can be implied	1
	measles vaccine caused a big drop **or** correct use of figures		1
	MMR wipes out measles **or** drops to (almost) zero **or** doesn't fall as much as measles vaccine **or** correct use of figures.		1
2(b)	mump(s)	either order	1
	rubella / german measles	allow phonetic spelling	1
2(c)	white blood cells	allow lymphocytes / leucocytes ignore memory cells	1
	(wbc) produce antibodies	ignore antitoxins / antigens / antibiotics / engulfing	1
	in future / if re-infected antibody production rapid / fast(er) / quick(er)	allow ecf from antitoxins / antigens / antibiotics ignore engulfing ignore reference to specificity	1
Total			**8**

4.3.1.2 Viral diseases

Answer 14 · Mark scheme January 2012 | BL1HP | Original Q2 | Legacy

COMPONENT NUMBER: BL1HP

4.3.1.2 Viral diseases

Answer 15 · Mark scheme

June 2012 | BL1HP | Original Q5 | Legacy

Question 5

question	answers	extra information	mark
5 (a)(i)	dead / inactive / weakened	allow antigen / protein ignore ref to other components ignore small amount	1
	pathogen / bacterium / virus / microorganism	ignore germs / disease	1
5 (a)(ii)		antigen / antibiotic instead of antibody = max 2	
	white blood cells produce / release antibodies	accept lymphocytes / leucocytes / memory cells produce antibodies do **not** accept phagocytes	1
	antibodies produced quickly		1
	(these) antibodies destroy the pathogen	allow kill do **not** accept antibodies engulf pathogens	1
5 (b)(i)	(live) bacteria still in body	ignore numbers	1
	would reproduce	ignore mutation / growth	1
5 (b)(ii)	antibiotics / treatment ineffective **or** resistant pathogens survive	accept resistant out compete non-resistant	1
	these reproduce		1
	population of resistant pathogens increases	allow (resistant pathogens reproduce) rapidly	1
Total			**10**

4.3.1.2 Viral diseases

Answer 15 · Mark scheme

June 2012 | BL1HP | Original Q5 | Legacy

BL1HP

4.3.1.2 Viral diseases

Answer 16 · Mark scheme

Question 6

question	answers	extra information	mark
6(a)(i)	any **one** from: • (produce) toxins / poisons • (cause) damage to cells	 kill / destroy cells allow kills white blood cells	1
6(a)(ii)	produce antitoxins engulf / ingest / digest pathogens / viruses / bacteria / microorganisms	 accept phagocytosis or description ignore eat / consume / absorb for engulf ignore references to memory cells	1 1
6(b)(i)	dead / inactive / weakened (measles) pathogen / virus	accept idea of antigen / protein ignore bacteria	1 1
6(b)(ii)	(after infection) rise begins sooner / less lag time steeper / faster rise (in number) longer lasting **or** doesn't drop so quickly	accept converse if clearly referring to before vaccination idea of staying high for longer ignore reference to higher starting point	 1 1 1
6(b)(iii)	antibodies are specific or needs different antibodies	accept antigens are different **or** white blood cells do not recognise virus	1
6(c)	reduces spread of infection / less likely to get an epidemic	 accept idea of eradicating measles	1
Total			**10**

4.3.1.2 Viral diseases

Answer 16 · Mark scheme

January 2013 | BL1HP | Original Q6 | Legacy

BL1HP

4.3.1.2 Viral diseases

Answer 17 · Mark scheme

Question	Answers	Extra information	Mark	AO / spec ref.
4(a)	mumps rubella / German measles	in either order both needed for the mark ignore measles unqualified	1	AO1 1.1.2l
4(b)(i)	80(.0)	allow **1** mark for $\frac{504}{630}$ **or** 0.8	2	AO2 1.1.2
4(b)(ii)	less chance of epidemic / pandemic **or** less chance of spread of disease / measles / mumps / rubella	allow idea of herd immunity (increased protection for those who are not vaccinated) ignore less chance of getting the disease **or** to eradicate the disease	1	AO2 1.1.2e,l
4(c)(i)	dead / inactive pathogens / viruses / bacteria	allow antigens / proteins from pathogens / viruses / bacteria ignore microorganisms	1	AO1 1.1.2l
4(c)(ii)	white blood cells produce antibodies antibodies produced rapidly (on re-infection) **or** response rapid (on re-infection) these antibodies kill pathogens / viruses / bacteria	 allow ecf if antibodies incorrectly identified in first marking point do **not** accept idea that original antibodies remain in blood and kill pathogens	1 1 1	AO1 1.1.2c, d,e,l
4(d)(i)	antibiotics don't kill viruses (because measles) virus / pathogen lives inside cells	allow antibiotics only kill bacteria allow antibiotics do not work inside cells **or** killing virus / pathogen would kill / damage cell	1 1	AO1 / AO2 1.1.2h
4(d)(ii)	(bacteria / pathogens) develop resistance (to antibiotic)	ignore reference to immunity ignore viruses develop resistance	1	AO1 1.1.2i,j
Total			**11**	

4.3.1.2 Viral diseases

Answer 17 · Mark scheme

June 2014 | BL1HP | Original Q4 | Legacy

Question	Answers	Extra information	Mark	AO / spec ref.

4.3.1.2 Viral diseases

Answer 18 · Mark scheme

June 2022 | 8461/1H | Original Q7

Question 7

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.1	any **one** from: • sexual contact / intercourse • exchange of body fluids	allow intercourse unqualified ignore kissing allow example of exchange such as (drug) users sharing needles **or** blood transfusion **or** passage from mother to foetus in uterus	1	AO1 4.3.1.1 4.3.1.2

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.2	(number of cases) in women decreases then increases, then decreases (number of cases) in men increases then decreases	ignore use of figures allow **total** numbers (of men and women together) increase then decrease ignore reference to differences between men and women if no other marks awarded allow overall trend decreases in **both** for **1** mark	1 1	AO3 4.3.1.1 4.3.1.2

4.3.1.2 Viral diseases

Answer 18 · Mark scheme

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.3	any **one** from: • better education (into prevention of spread of HIV) • condoms more widely available **or** condoms easier to source **or** condoms cheaper • new / better drugs (to prevent HIV infection / spread) • better / more testing / identification (of people with HIV)	allow increased awareness about HIV ignore contraception / protection unqualified allow PrEP / anti-retrovirals stop the virus being passed on ignore new treatments do **not** accept antibiotics allow less promiscuity ignore vaccination	1	AO3 4.3.1.2

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.4	$\frac{242}{1288}$		1	AO2 4.3.1.2
	0.1878…	allow a rounded answer	1	
	0.188 (:1)	allow a correctly rounded answer from student's incorrect division using numbers from **Table 8** do **not** accept if a unit is given	1	

4.3.1.2 Viral diseases

Answer 18 · Mark scheme

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.5	any **one** from: • calculate as a percentage • give the numbers per 100 000 people	ignore calculate as a proportion allow any standard number eg 10 000 / 1000	1	AO3 4.3.1.2

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.6		ignore reference to WBC unqualified		AO1 4.3.1.7 4.3.1.6 4.3.1.2
	inactive HIV / virus is injected (into bloodstream / muscle / body)	allow dead HIV / virus is injected (into bloodstream / muscle / body) allow (named) part of HIV / virus is injected (into bloodstream / muscle / body)	1	
	white bloods cells produce antibodies (against inactive virus)	allow lymphocytes produce antibodies (against inactive virus) do **not** accept phagocytes produce antibodies (against inactive virus)	1	
	(if infected with HIV) correct / specific antibodies are produced quickly		1	
	antibodies destroy the (active) virus / HIV	allow antibodies 'kill' the (active) virus / HIV	1	

4.3.1.2 Viral diseases

Answer 18 · Mark scheme

June 2022 | 8461/1H | Original Q7

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.7	HIV / antigen / protein injected into mouse	allow other correct small mammals eg rat	1	AO1 4.3.2.1
	extract / collect (mouse) lymphocytes that make a specific antibody to HIV / antigen / protein	allow extract specific lymphocytes from someone with HIV for **2** marks	1	
	lymphocytes are combined with a tumour cell to create a hybridoma	allow lymphocytes are combined with a myeloma / cancer cell to create a hybridoma	1	
	(hybridoma) cloned to create many cells that produce the antibody		1	
		alternative route HIV / antigen / protein injected into mouse (1) lymphocytes from mouse are combined with a tumour cell to create a hybridoma (1) the hybridoma that makes the specific / correct antibody is isolated (1) (hybridoma) cloned to create many cells that produce the antibody (1)		

4.3.1.2 Viral diseases

Answer 18 · Mark scheme

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.8		allow 'the virus' for HIV throughout		AO3 4.3.2.1 4.3.2.2
	monoclonal antibody is complementary / specific to HIV antigen	allow correct description of complementarity	1	
	monoclonal antibodies attach to (all the) HIV antigens		1	
	(so) HIV cannot bind to (human) cell **or** (so) HIV genetic material cannot enter (human) cell	allow white blood cells **or** phagocytes identify (monoclonal) antibodies and engulf / destroy (antibody bound) HIV	1	
		alternative route monoclonal antibody is complementary / specific to HIV antigen (1) monoclonal antibody with (anti-retroviral) drug attached attaches to the HIV antigens (1) drug destroys the virus **or** drug destroys genetic material (1)		

Total Question 7		19

4.3.1.2 Viral diseases

Answer 19 · Mark scheme

June 2025 | 8461/1H | Original Q1

Question 1

Question	Answers	Extra information	Mark	AO / Spec Ref.
01.1	virus		1	AO1 4.3.1.2

Question	Answers	Extra information	Mark	AO / Spec Ref.
01.2	any **one** from: • (transfer of) droplets / saliva / mucus • sneezes • coughs	ignore other methods of transferring pathogens, unqualified such as touch or direct contact do **not** accept transfer through sexual intercourse	1	AO1 4.3.1.2

Question	Answers	Extra information	Mark	AO / Spec Ref.
01.3	willow	ignore parts of willow such as bark / leaves	1	AO1 4.3.1.9

Question	Answers	Extra information	Mark	AO / Spec Ref.
01.4	fever **or** (red skin) rash	allow high temperature allow (increased) sweating allow (red) spots / lumps / boils allow red / itchy skin allow cough / sneeze allow runny / blocked nose allow sore throat allow red / watery / sore eyes allow headache ignore flu-like symptoms, unqualified ignore pain unqualified do **not** accept nausea / diarrhoea	1	AO1 4.3.1.2

4.3.1.2 Viral diseases

Answer 19 · Mark scheme

Question	Answers	Extra information	Mark	AO / Spec Ref.
01.5	**few(er)** people (in population) with pathogen / measles / disease (due to vaccination) (so) **less likely** for pathogen / measles / disease to be passed on **or** (so) **less likely** for pathogen / measles / disease to be spread / caught	allow named types of pathogen allow (provides) herd immunity allow **less likely** to come into contact with a person with pathogen / measles / disease ignore (so) spread of disease is reduced allow **2** marks for fewer people with measles, so **less likely** to spread	1 1	AO2 4.3.1.2 4.3.1.7

Question	Answers	Extra information	Mark	AO / Spec Ref.
01.6	(graph reading) = 45 $\frac{45}{100} \times 240$ 108	 allow 0.45 × 240 allow for **1** mark an answer of 7 / 7.2 with evidence of having used 3(%) from **Figure 1** **or** allow for **1** mark an answer of 88 / 88.8 / 89 with evidence of having used 37(%) from **Figure 1**	1 1 1	AO2 4.3.1.2

4.3.1.2 Viral diseases

Answer 19 · Mark scheme

Question	Answers	Extra information	Mark	AO / Spec Ref.
01.7		allow answers in terms of numbers of children or likelihood of getting disease		AO3 4.3.1.2
	a lower percentage of vaccinated children have severe measles / infection / disease **or** a higher percentage of unvaccinated children have severe measles / infection / disease **or** vaccination reduces severity of measles / infection / disease	allow converse	1	
	correct use of supporting comparative data from **Figure 9**	allow examples such as (severe disease is) 42% higher (in unvaccinated) **or** 15 times higher (than in vaccinated) **or** allow correct use of raw data used in a comparative way	1	

Total Question 1	11

4.3.1.2 Viral diseases

Answer 18 · Examiner comments

June 2022 | 8461/1H | Original Q7

Question 7 (Standard, standard/high and high demand)

07.1 Over 90% of students answered correctly, although occasional vague answers such as 'physical contact' were seen. References to sex or sexual contact / intercourse were the most commonly seen responses, but sharing needles or exchange of body fluids was also frequently seen. Some students talked about 'contraception' but did not qualify this as being a barrier method, which was not creditworthy.

4.3.1.2 Viral diseases

Answer 18 · Examiner comments

07.2 Nearly 80% of students gained one mark in this question, either for referring to the number of cases increasing and then decreasing in men, or, for the fall-back mark of an overall decrease. A surprising number of students failed to read the figures correctly and suggested that cases in both men and women were decreasing or increasing until 2014. Several students identified a trend but failed to attribute it to men, women or both. Some did not attribute an overall decrease to **both** men and women or that the **total** number increased then decreased. Many compared the numbers of men and women, particularly saying that the number of cases in men was higher than in women, which was not incorrect, but not creditworthy. Several described the increase in 2014 as an anomaly. Students should be reminded to check the number of marks available for each question and to take care to consider each column of the table separately.

07.3 Just over half of students grained credit in his question. Those who fell short of the mark often gave vague answers such as 'education' or' contraception' without reference to an improvement, such as 'more', 'greater' or 'better'. Reference to vaccines was very common, which was the most common answer for zero marks, as well as several suggesting the development of herd immunity.

07.4 Over two thirds of students achieved full marks on this calculation question. Those that scored two marks often had the numerator and denominator reversed in their division or failed to round their answer to three significant figures, with the most common incorrect answer given being 0.19. The majority of students achieved 3 marks for a correct answer, sometimes given without any working shown and sometimes when the method of calculation was not clearly apparent. Some gave the figures as a ratio and did no calculation. Others gave the figures as a ratio but then produced figures which indicated that they had divided them. Many divided both numbers by 2, for no apparent reason. It was apparent that some students didn't have calculators, although some still managed a correct calculation.

07.5 Less than half of students gained this mark, with the most common incorrect answer being graphing the data to visually compare. It was also suggested frequently that the same number of men and women should be tested, considering this as a controlled investigation rather than gathered statistics. A significant number suggested presenting the results as a ratio, or presenting the total number, rather than just new cases.

07.6 A significant number of students were muddling the terms antibodies and antigens in their answer to this question about the process of vaccination. There was also some confusion around antibodies and antitoxins, and some suggesting the vaccine itself contained the antibodies. The most commonly achieved mark was mark point 1, although some students forgot to mention that the inactive virus needed to be injected into the body in some way. For MP2, some students failed to gain credit because they referred to the 'body' or 'immune system' producing the antibodies, which was not specific enough. For MP3, most students did not articulate the idea of specificity, just that antibodies were produced more quickly. There was occasionally confusion between white blood cells, lymphocytes and antibodies, with students saying that specific lymphocytes were produced, rather than specific antibodies. For this mark point, correct / specific antibodies could be inferred if it was stated that specific antibodies had been produced for MP2, and that these were produced on

infection. A few students talked about monoclonal antibodies suggesting they may have returned to this question after looking at questions 07.7 and 07.8. Surprisingly, MP4 was the least credited, as most students ended their account at the production of antibodies and failed to make any reference to what the antibodies do. Where there were references to the virus being destroyed / killed, this was equally likely to be in the context of the dead / inactive virus. There were also many references to preventing infection or 'fighting off', 'dealing with', 'tackling the virus' or other similar imprecise statements. There were frequent references to vaccination of a large proportion of the population providing herd immunity.

07.7 Many students were confident in describing the need for the mouse to be injected and understood that lymphocytes are combined with a tumour cell to create a hybridoma, however, many students went on to suggest that the antibodies were fused to the tumour cell, rather than the lymphocytes. The combination of ideas of extraction of lymphocytes and that these must be ones that produce specific antibodies to HIV was less well described. The most challenging part was that these hybridoma cells are then cloned to create many cells, and that it is these cells that produce the monoclonal antibodies. Vague references to 'injecting disease' were occasionally seen. The 'allowed' idea that specific lymphocytes were extracted from someone with HIV was not seen. Another common misconception highlighted by this question was the idea that the hybridoma is the monoclonal antibody. There were some very interesting attempts at spelling hybridoma in student answers.

07.8 Just over 50% of students scored marks on this question, with many not using the figure to scaffold their answer. Several answers referring to the idea of reducing the speed of spread of the virus resulting in less damage to the immune system (and therefore meaning that the patient's own immune system is better able to fight the virus for longer, reducing the chance of the viral load getting high enough to result in AIDs) were seen.
Most students missed mark point 1, and for those who did attempt it, many omitted to reference the idea that the shapes of the antibody and antigen were complementary, rather just giving the key word 'specific'.
There was further evidence of the misconception seen in question 07.7 regarding the hybridoma being given to people as the treatment (rather than isolating the antibodies), or that the hybridoma is the monoclonal antibody.
A number of students made references to the antigen or antigen binding site shape being changed which may be evidence of confusion with enzyme biology. There were also a lot of students describing the antigen being destroyed so that the HIV could not bind to the human cell. A reasonably sized group of students clearly do not understand the process of viral infection and talked about the antigen binding site allowing the human cell to take in the HIV DNA and 'learn it' so that they can produce antibodies to fight it off.
In some responses it appeared that students were identifying the human cell from the figure as a white blood cell which 'remembers' HIV, whilst others mistook the human cell for the monoclonal antibody. For the final mark point, many students thought that it was the monoclonal antibodies which engulfed / destroyed the HIV, or that the antibodies destroyed infected cells once the HIV genetic material had entered. Some thought that it was the human cell, or the antigen binding sites on it, that were doing the engulfing when invaded by HIV.

4.3.1.2 Viral 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.

4.3.1.2 Viral diseases

Answer 19 · Examiner comments

Question 1 (standard demand)

01.1 Over 80% of students gained credit for the answer of 'virus' in this question. Of the minority of incorrect answers, the most common was 'bacteria', followed by 'fungi', 'protist' and 'communicable'.

01.2 65% of students correctly stated how measles could be spread, but some referred more vaguely to 'direct contact' or 'through the air', neither of which gained credit. A few incorrectly believed that measles is a sexually transmitted disease.

01.3 Pleasingly, 85% of students were able to identify 'willow' in this question. A small number of students did not gain credit as they had included a second, incorrect answer alongside willow, such as foxglove.

01.4 90% of students achieved the mark in this question owing to the wide range of creditable symptoms listed in the mark scheme. Some students gave unnecessarily long lists of symptoms, which occasionally led to the mark being disqualified when symptoms such as nausea and diarrhoea were included.

01.5 Although students found this question accessible, very few (10%) managed to gain both marks. 45% of students achieved 1 mark, usually for the idea of herd immunity in MP1. Many students focused on how vaccination affects individuals, rather than the impact of vaccination on the population as a whole. This led to responses about personal immunity rather than a decrease in measles frequency at the population level. Occasionally, students stated that measles would not be passed on to the next generation, as if it was a genetic disorder. MP2 required the idea of reduced likelihood, chance or probability of measles being spread and not a simple rewrite of the question such as 'therefore spread would be reduced'.

01.6 90% of students scored full marks in this question. The most common error seen involved using data from more than one bar or calculating a percentage using values from two bars.

01.7 Most students made a reasonable attempt at this question, with those scoring marks realising that the data in the figure showed the percentages of vaccinated and unvaccinated children who all had measles, and the degree of severity of these cases. The data did not show information about the likelihood of the children catching measles in the first place. Students who achieved both marks (45%) typically used comparative language and precise data from the graph in one concise sentence. Terms like *only* were effectively used to emphasise differences, and some students successfully manipulated data to give clear, accurate responses. Those who achieved 1 mark had usually identified that vaccination reduces severity (MP1) whilst those that scored zero marks (31%) tended to give an answer which focused on the chance of contracting measles.