

The Morley Academy

3. Infection & Response Mastery Booklet

(Biology Paper 1)

Name : _____

Teacher : _____

Date Given : _____

These booklets are a consolidation of your learning. They should be used in the following way - You should attempt the questions WITHOUT looking at the answers. Then mark your questions with **green pen** and add any missing marks you missed.

THIS WILL IMPROVE YOUR GRADES...!!

Q1.

Microorganisms cause infections.

The human body has many ways of defending itself against microorganisms.

- (a) Describe **two** ways the body prevents the entry of microorganisms.

1. _____

2. _____

(2)

- (b) In 2014 the Ebola virus killed almost 8000 people in Africa.

Drug companies have developed a new drug to treat Ebola.

Explain what testing must be done before this new drug can be used to treat people.

(6)

(Total 8 marks)

Q2.

The MMR vaccine is used to protect against measles.

- (a) Apart from measles, which **two** other diseases does the MMR vaccine protect against?

_____ and _____

(1)

- (b) Read the information.

Measles is a dangerous disease caused by a virus.
Normally, MMR vaccinations are given at 1 year old and again at 4 years old.
Each vaccination is 90% effective in protecting against the measles virus.

In April 2013, there were 630 cases of measles in children aged 4 and over in a small area of the UK. Of these cases, 504 children had not been vaccinated against MMR at all and only a few had been given a second vaccination.

- (i) Calculate the percentage of the children who caught measles in April 2013 who had **not** been vaccinated against MMR.

Percentage = _____

(2)

- (ii) Suggest **one** advantage to the population as a whole of children having the second MMR vaccination.

(1)

- (c) (i) What does a vaccine contain?

(1)

- (ii) Explain how a vaccination prevents infection.

(3)

- (d) (i) Antibiotics can only be used to treat some infections.

Explain why antibiotics **cannot** be used to treat measles.

(2)

- (ii) Why do antibiotics become less useful at treating an infection if the antibiotic is overused?

(1)

(Total 11 marks)

Q3.

Microorganisms can cause disease.

- (a) Draw **one** line from each disease to the correct description.

HIV

Can be spread by not washing hands thoroughly.

Can increase the chance of infection such as pneumonia.

Malaria

Part of the life cycle includes an insect.

spread by cough and sneezes.

Salmonella

Treated with stem cell.

Treated with fungicides.

(3)

(b) Gonorrhoea is a sexually transmitted disease.

A bacterium causes gonorrhoea.

What are the symptoms of gonorrhoea?

Tick **two** boxes.

Headache

☐

Pain when urinating

☐

Rash

☐

Vomiting

☐

Yellow discharge

☐

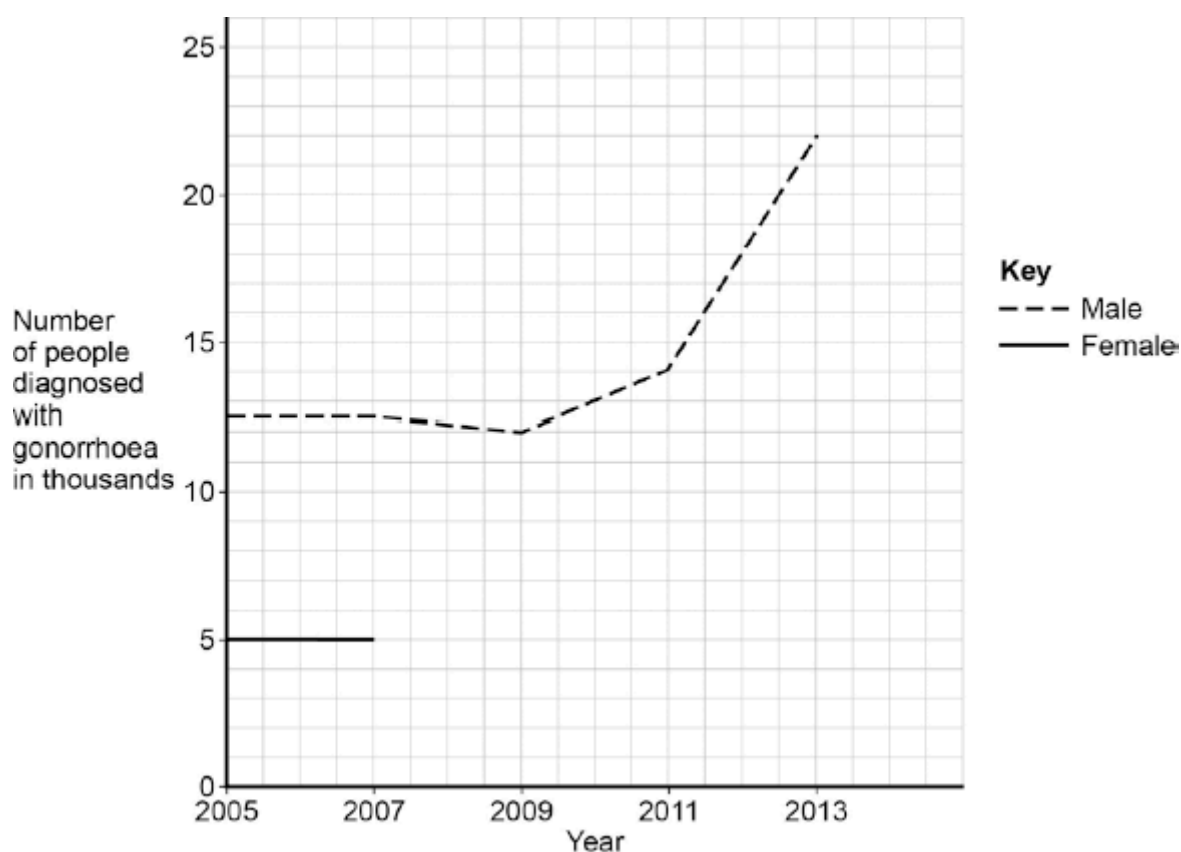
(2)

- (c) The table below shows the number of people in the UK diagnosed with gonorrhoea in different years.

Number of people diagnosed with gonorrhoea in thousands		
Year	Female	Male
2005	5.0	12.5
2007	5.0	12.5
2009	5.5	12.0
2011	6.0	14.0
2013	7.5	22.0

Use the data in the table to complete the graph below.

- The numbers for males have already been plotted.
- Only some of the numbers for females have been plotted.



(3)

- (d) Describe the patterns in the numbers of males and females with gonorrhoea from 2005 to 2013.

Use the data in the graph.

(3)

- (e) Gonorrhoea is treated with an antibiotic.

HIV is another sexually transmitted disease.

Explain why prescribing an antibiotic will **not** cure HIV.

(2)

(Total 13 marks)

Q4.

Hepatitis B is a liver disease caused by a virus. The virus is found in body fluids such as blood, saliva and urine. Diagram 1 shows the structure of the virus in cross section.

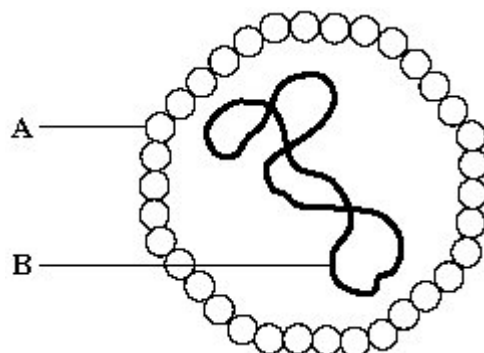


Diagram 1

- (a) The human body has several natural defences against viruses. Some of these prevent viruses from entering the body. Others act once the viruses have entered.

- (i) Diagram 2 shows a white blood cell attacking a group of viruses.

Complete diagram 2 by drawing the 2nd stage.

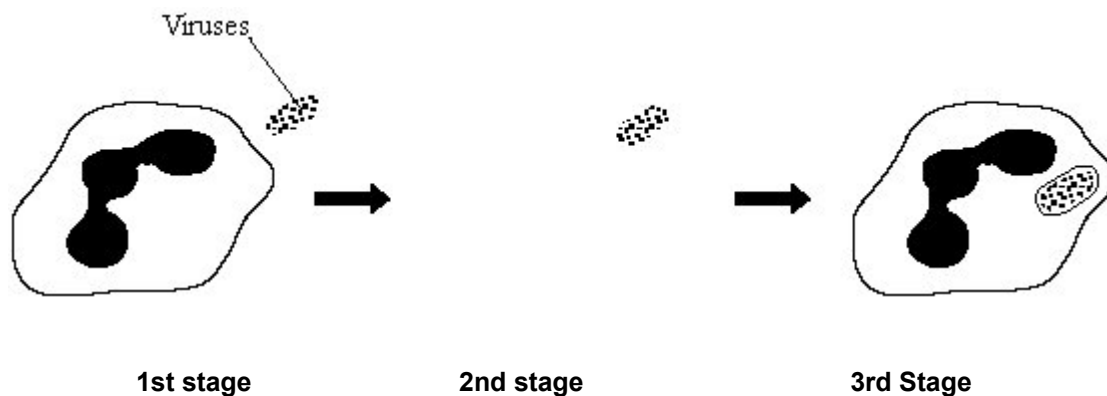


Diagram 2

(1)

- (ii) What type of chemical is released by some white blood cells to attack viruses?

(1)

- (b) Hepatitis B is more likely to be spread among people who share needles when they inject drugs. Use information given at the beginning of this question to explain why this is so.

(2)

(Total 4 marks)

Q5.

Viruses and bacteria cause diseases in humans.

- (a) Draw a ring around the correct word to complete the sentence.

Organisms that cause disease are called

algae.
pathogens.
vaccines.

(1)

- (b) In August 2011 the United Nations gave a warning that there was a new strain of the bird flu virus in China.

Bird flu may kill humans. The new strain of the bird flu virus could cause a *pandemic* very quickly.

- (i) What is a *pandemic*?

Tick (✓) **one** box.

A disease affecting the people all over one country.

☐

A disease affecting hundreds of people

☐

A disease affecting people in many countries.

☐

(1)

- (ii) The swine flu virus is carried by pigs.

The bird flu virus is likely to spread much more quickly than the swine flu virus.

Suggest **one** reason why.

(1)

This notice is from a doctor's surgery.

**Unfortunately,
antibiotics
will NOT get
rid of your flu.**

- (c) (i) Why will antibiotics **not** get rid of flu?

(1)

- (ii) The symptoms of flu include a sore throat and aching muscles.

What would a doctor give to a patient to relieve the symptoms of flu?

(1)

- (iii) It is important that antibiotics are **not** overused.

Explain why.

Use words from the box to complete the sentence.

antibody	bacteria	immune	resistant	viruses
-----------------	-----------------	---------------	------------------	----------------

Overuse of antibiotics might speed up the development

of _____ strains of _____ .

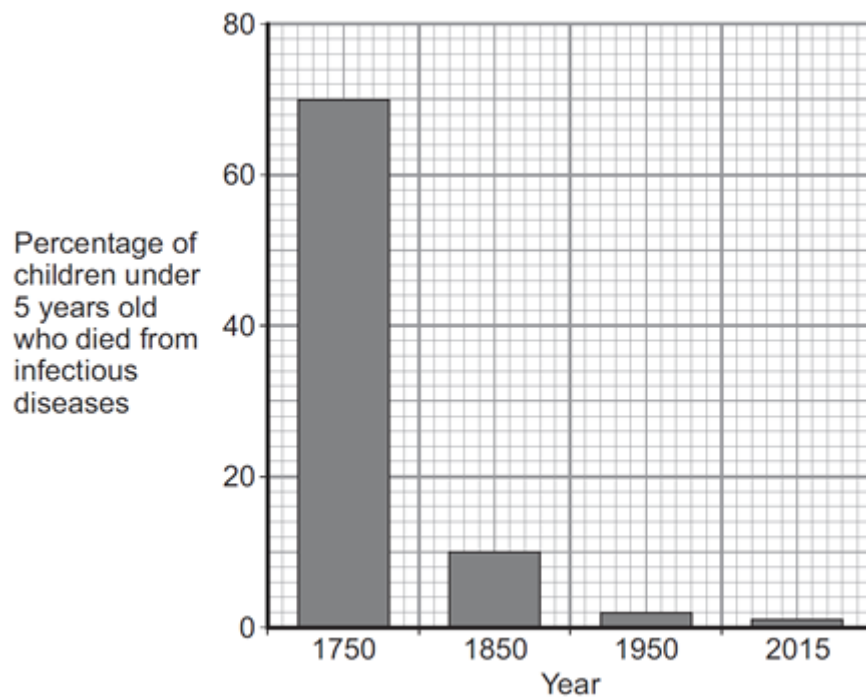
(2)

(Total 7 marks)

Q6.

Pathogens are microorganisms that cause infectious diseases.

- (a) The graph shows the percentage of children under 5 years old who died from infectious diseases, in the UK, in four different years.



- (i) Between 1750 and 1850 vaccinations were also developed.
What is in a vaccine?

Tick (✓) **one** box.

large amounts of dead pathogens

☐

large amounts of live pathogens

☐

small amounts of dead pathogens

☐

(1)

- (ii) The advances in medicine had an effect on death rate.

Describe the effect these advances had between 1750 and 1850.

To gain full marks you should include data from the graph above.

(2)

(b) Antibiotics were developed in the 1940s. Antibiotics kill bacteria.

(i) Which **one** of the following is an antibiotic?

Draw a ring around the correct answer.

cholesterol

penicillin

thalidomide

(1)

(ii) The use of antibiotics has **not** reduced the death rate due to all diseases to zero.

Suggest **two** reasons why.

1. _____

2. _____

(2)

(c) In school laboratories, bacteria should be grown at a maximum temperature of 25 °C.

Give **one** reason why companies testing new antibiotics grow bacteria at 37 °C.

(1)

(Total 7 marks)

Q7.

The influenza virus damages the cells lining the respiratory tract causing sore throats.

Coughing and sneezing spread the virus.

(a) Give the correct term for this method of spreading an infection.

(1)

(b) In an immunisation programme such as that for MMR (Measles, Mumps and Rubella), suggest why it is essential for a large proportion of the child population to be vaccinated in order to protect the few individuals who are unable to be vaccinated.

(1)

- (c) In some modern influenza vaccines the protein surface sub-units are separated from the virus coat and used for the vaccine. This stimulates an effective immune response in the same way as inactive pathogens.

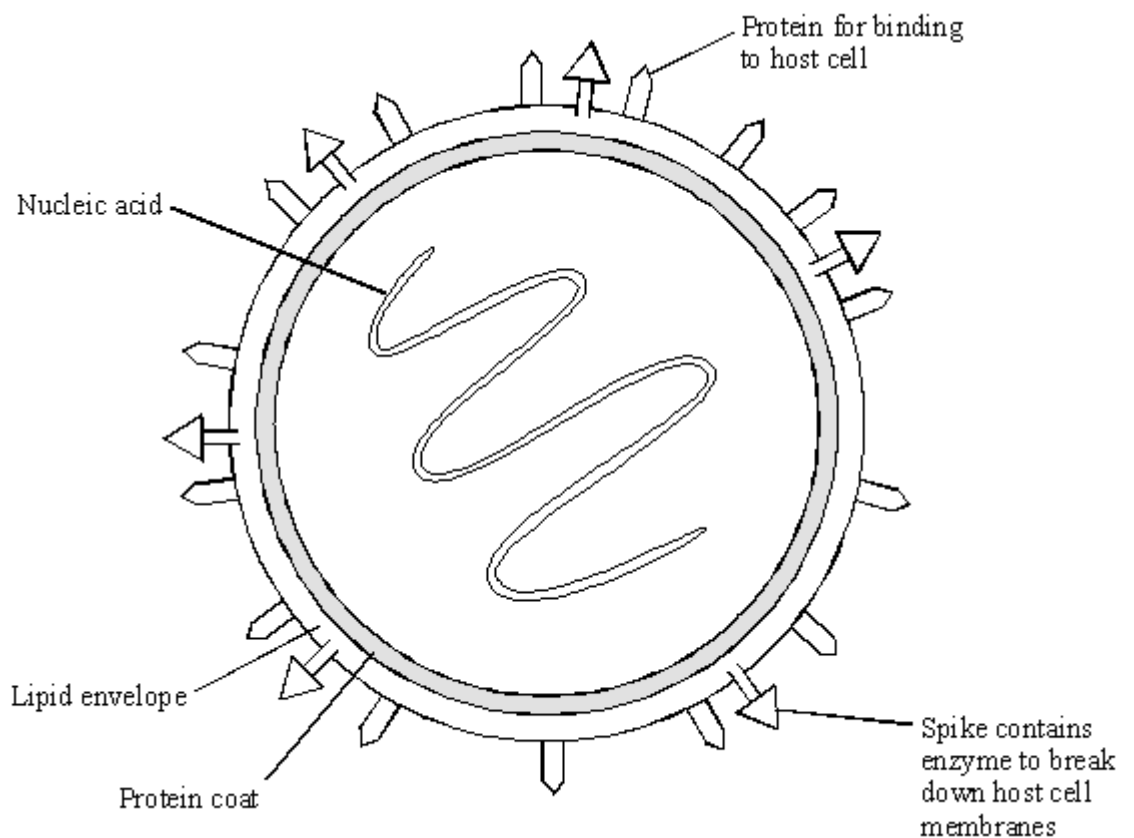
- (i) Explain how this immunity is produced in the body following vaccination, and how further illness from the same virus is prevented.

(4)

- (ii) This type of immunity resulting from an influenza injection is described as _____ immunity.

(1)

- (d) The diagram shows the structure of an influenza virus.



Influenza epidemics can arise because the nucleic acid of the virus frequently changes. This results in changes in the virus structure and so a new strain of the virus is formed. A person who has had influenza or who has been vaccinated may not be immune to the new strain.

Explain why this is so, using the diagram of the influenza virus structure and your knowledge of immunity.

(3)

(Total 10 marks)

Q8.

Antibiotics can be used to protect our bodies from pathogens.

- (a) What is a pathogen?

(1)

- (b) Bacteria may become resistant to antibiotics.

How can doctors reduce the number of bacteria that become resistant to antibiotics?

(2)

- (c) Scientists grow microorganisms in industrial conditions at a higher temperature than is used in school laboratories.

- (i) Which temperature would be most suitable for growing bacteria in industrial conditions?

Draw a ring around the correct answer.

25 °C

40 °C

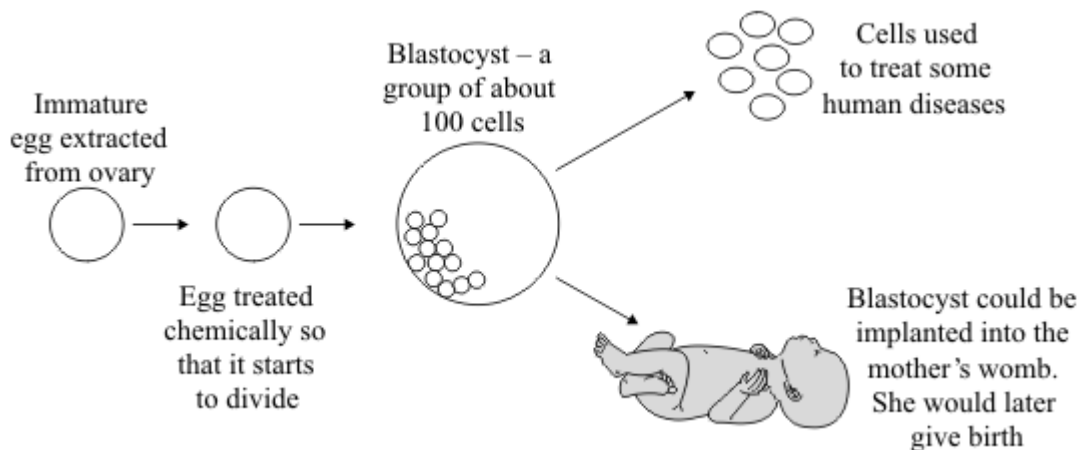
100 °C

(1)

- (ii) What is the advantage of using the temperature you gave in part (c)(i)?

Q9. BIOLOGY ONLY

The diagram shows how an immature egg could be used either to produce cells to treat some human diseases or to produce a baby.



Scientists may be allowed to use this technique to produce cells to treat some human diseases, but not to produce babies.

Using information from the diagram, suggest an explanation for this.

Q10.

Stem cells can be collected from human embryos and from adult bone marrow.
Stem cells can develop into different types of cell.

The table gives information about using these two types of stem cell to treat patients.

Stem cells from human embryos	Stem cells from adult bone marrow
It costs £5000 to collect a few cells.	It costs £1000 to collect many cells.
There are ethical issues in using embryo stem cells.	Adults give permission for their own bone marrow to be collected.
The stem cells can develop into most other types of cell.	The stem cells can develop into only a few types of cell.
Each stem cell divides every 30 minutes.	Each stem cell divides every four hours.
There is a low chance of a patient's immune system rejecting the cells.	There is a high chance of a patient's immune system rejecting the cells.
More research is needed into the use of these stem cells.	Use of these stem cells is considered to be a safe procedure.

Scientists are planning a new way of treating a disease, using stem cells.

Use **only** the information above to answer these questions.

- (a) Give **three** advantages of using stem cells from embryos instead of from adult bone marrow.

1. _____
2. _____
3. _____

(3)

- (b) Give **three** advantages of using stem cells from adult bone marrow instead of from embryos.

1. _____
2. _____
3. _____

(3)

(Total 6 marks)

Q11.

Read the information about stem cells.

Stem cells are used to treat some human diseases.

Stem cells can be collected from early embryos. These stem cells have not begun to differentiate, so they could be used to produce any kind of cell, tissue or organ. The use of embryonic stem cells to treat human diseases is new and, for some diseases, trials on patients are happening now.

Stem cells can also be collected from adult bone marrow. The operation is simple but may be painful. Stem cells in bone marrow mainly differentiate to form blood cells. These stem cells have been used successfully for many years to treat some kinds of blood disease. Recently there have been trials of other types of stem cell from bone marrow. These stem cells are used to treat diseases such as heart disease.

Evaluate the use of stem cells from embryos or from adult bone marrow for treating human diseases.

You should give a conclusion to your evaluation.

(5)

(Total 5 marks)

Q12.

- (a) How many pairs of chromosomes are there in a body cell of a human baby?

(1)

- (b) Place the following in order of size, **starting with the smallest**, by writing numbers **1 – 4** in the boxes underneath the words.

chromosome

nucleus

gene

cell



(1)

- (c) For a baby to grow, its cells must develop in a number of ways.

Explain how each of the following is part of the growth process of a baby.

- (i) Cell enlargement

(1)

- (ii) The process of cell division by mitosis

(3)

- (d) Why is cell specialisation (differentiation) important for the development and growth of a healthy baby from a fertilised egg?

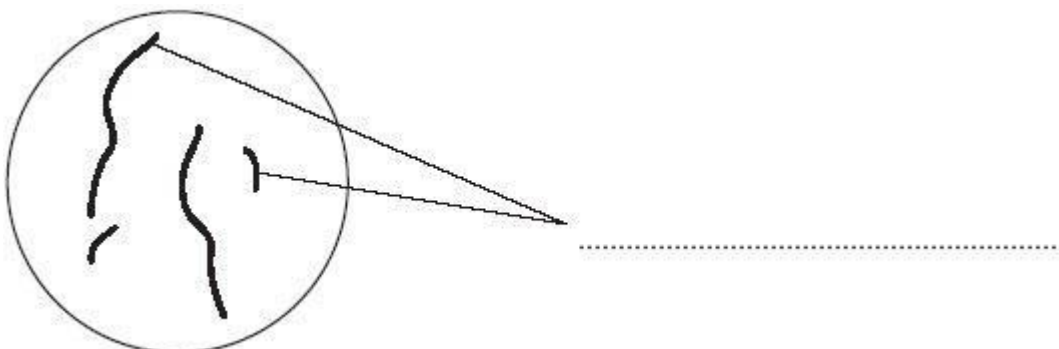
(2)

(Total 8 marks)

Q13.

Diagram 1 shows the nucleus of a body cell as it begins to divide by mitosis.

Diagram 1



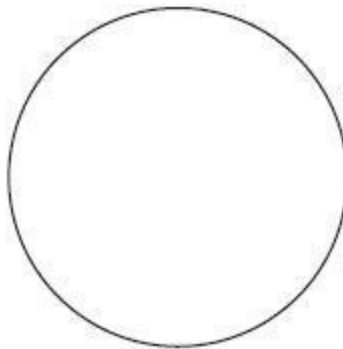
- (a) Use a word from the box to label **Diagram 1**.

alleles	chromosomes	gametes
---------	-------------	---------

(1)

- (b) Complete **Diagram 2** to show what the nucleus of one of the cells produced by this mitosis would look like.

Diagram 2



(1)

- (c) Stem cells from a recently dead embryo can be grown in special solutions.

Some facts about stem cells are given below.

- Stem cells from an embryo can grow into any type of tissue.
- Stem cells may grow out of control, to form cancers.
- Large numbers of stem cells can be grown in the laboratory.
- Stem cells may be used in medical research or to treat some human diseases.
- Patients treated with stem cells need to take drugs for the rest of their life to prevent rejection.
- Collecting and growing stem cells is expensive.

Use **only** the information above to answer these questions.

- (i) Give **two** advantages of using stem cells.

1. _____

2. _____

(2)

- (ii) Give **two** disadvantages of using stem cells.

1. _____

2. _____

(2)

(Total 6 marks)

Q14.

- (a) A healthy diet should be balanced.

What is meant by a balanced diet?

(2)

- (b) Cholesterol has important functions in the body.
Some cholesterol is produced by the liver.
Cholesterol is needed in the body to make the hormone oestrogen.

- (i) Name the organ in the body which produces oestrogen.

(1)

- (ii) What effect does oestrogen have on the female reproductive cycle?

(1)

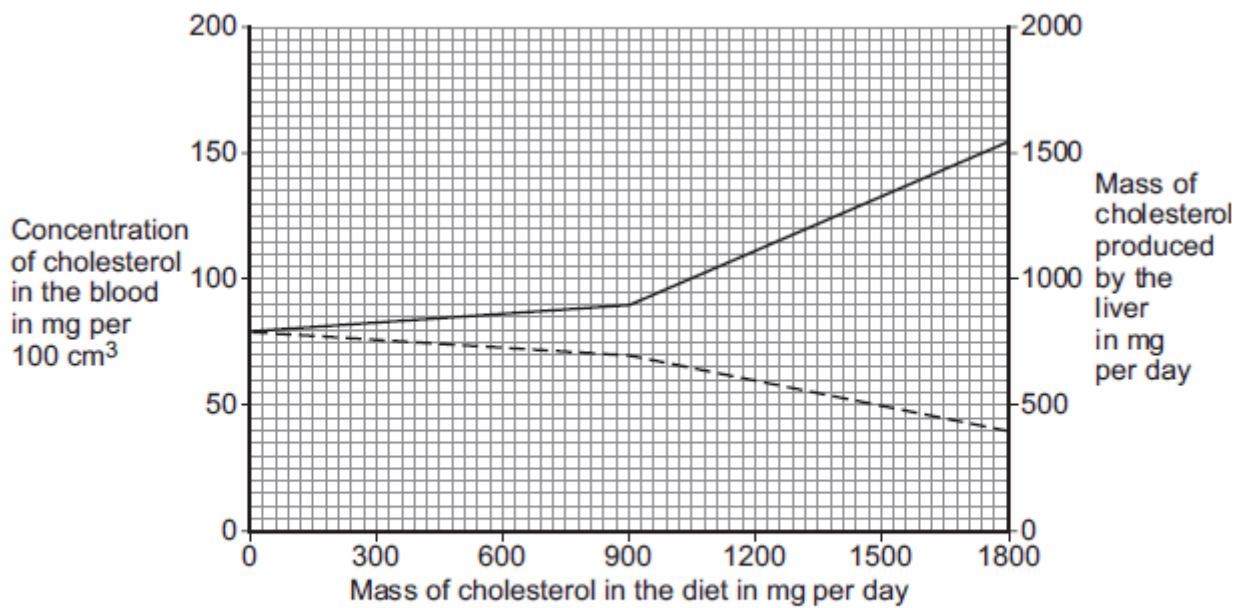
- (iii) Oestrogen is a naturally occurring steroid hormone.

Give **one** artificial use of a steroid hormone in the body.

(1)

(c) The graph below shows the effect of the mass of cholesterol in the diet on:

- the concentration of cholesterol in the blood
- the mass of cholesterol produced by the liver.



Key

- Blood cholesterol concentration
 ---- Production by the liver

Describe the effect of increasing the mass of cholesterol in the diet on the mass of cholesterol produced by the liver.

To gain full marks you should include data from the graph in your answer.

(2)

(d) Large amounts of cholesterol in the diet switch off the production of an enzyme called reductase, in the liver.

An increase of the enzyme reductase increases the production of cholesterol by the liver.

- (i) Which part of a liver cell is responsible for controlling the production of reductase?

(1)

- (ii) High blood cholesterol concentrations increase the likelihood of heart and circulatory diseases.

Doctors can prescribe statins to control the concentration of cholesterol in the blood.

Suggest how statins work.

(1)

(Total 9 marks)

Mark schemes

Q1.

(a) any **two** from:

- acid in the stomach kills pathogens in food
 - skin forms a barrier / produces antimicrobial secretions
 - hairs in the nose trap (particles which may contain) pathogens
 - trachea / bronchi has mucus which traps pathogens
- or**
- bronchi have cilia which waft mucus to throat to be swallowed

2

(b) **Level 3 (5–6 marks):**

A clear, logical and coherent answer, with no significant redundancy. The student understands the process and links this to reasons for clinical trials.

Level 2 (3–4 marks):

A partial answer with errors and ineffective reasoning or linkage.

Level 1 (1–2 marks):

One or two relevant points but little linkage of points or logical reasoning.

0 marks:

No relevant content.

Indicative content

- pre-clinical trials of the new drug on cells / tissues / live animals
- to test toxicity, dosage and efficacy
- clinical trials / test on healthy volunteers and Ebola patients at very low doses
- so that you can monitor for safety / side effects
- and only then do trials to find the optimum dosage and test for efficacy
- double blind trial / use of placebo
- which does not contain the new drug
- random allocation of Ebola patients to groups
- so no one knows who has placebo / the new drug
- peer review of data
- to help prevent false claims

6

[8]

Q2.

(a) mumps

*in either order rubella / German measles
both needed for the mark
ignore measles unqualified*

1

(b) (i) 80(.0)

$\frac{504}{630}$
allow 1 mark for $\frac{504}{630}$ or 0.8

2

(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

- (c) (i) dead / inactive pathogens / viruses / bacteria
allow antigens / proteins from pathogens / viruses / bacteria
ignore microorganisms

1

- (ii) white blood cells produce antibodies

1

antibodies produced rapidly (on re-infection) **or** response rapid (on re-infection)
allow ecf if antibodies incorrectly identified in first marking point

1

these antibodies kill pathogens / viruses / bacteria
*do **not** accept idea that original antibodies remain in blood and kill pathogens*

1

- (d) (i) antibiotics don't kill viruses
allow antibiotics only kill bacteria

1

(because measles) virus / pathogen lives inside cells
*allow antibiotics do not work inside cells **or** killing virus / pathogen would kill / damage cell*

1

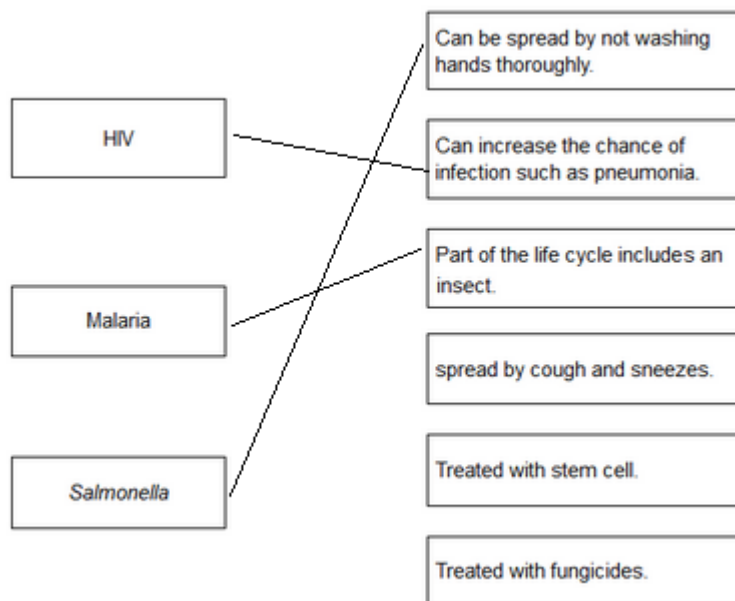
- (ii) (bacteria / pathogens) develop resistance (to antibiotic)
ignore reference to immunity
ignore viruses develop resistance

1

[11]

Q3.

(a)



each extra line negates a mark

4

(b) pain when urinating

1

yellow discharge

1

(c) three correct plots

allow 1 mark for two correct plots

2

correctly drawn line

1

(d) any **three** from:

- (fairly) level / steady up to 2009
*allow numbers of males fall (slightly) **and** females rise (slightly) up to 2009*
- (there is a) rise after 2009
- males are (always) higher than females
- males rising faster than females
allow overall increase (from 2005 to 2013)

3

(e) HIV is a virus

1

(and) antibiotics are only effective against bacteria

or

antibiotics do not kill viruses

allow viruses live inside cells

1

[13]

Q4.

- | | | | | |
|-----|------|---|---|------------|
| (a) | (i) | diagram shows extensions of intact cell membrane around viruses | 1 | |
| | (ii) | antibodies | | |
| | | <i>allow enzymes re (ii)</i> | | |
| | | <i>allow interferon</i> | | |
| | | <i>ignore antitoxins / proteins</i> | 1 | |
| (b) | | <u>virus</u> is transferred | 1 | |
| | | (virus in) blood / body fluids – transfer (via needles) | 1 | |
| | | | | [4] |

Q5.

- | | | | | |
|-----|-------|---|---|--|
| (a) | | pathogens | 1 | |
| (b) | (i) | A disease affecting people in many countries | 1 | |
| | (ii) | birds fly / migrate | | |
| | | <i>accept converse</i> | | |
| | | OR | | |
| | | human contact with birds more likely | | |
| | | <i>birds not contained / difficult to control movement</i> | | |
| | | OR | | |
| | | there are more birds (than pigs) | 1 | |
| (c) | (i) | antibiotics (only) <u>kill</u> bacteria | | |
| | | <i>ignore flu is caused by a virus unqualified</i> | | |
| | | OR | | |
| | | antibiotics don't <u>kill</u> viruses | | |
| | | <i>ignore virus resistant / immune</i> | 1 | |
| | (ii) | painkillers | | |
| | | <i>accept any correct named painkiller, eg aspirin or paracetamol</i> | | |
| | | <i>allow antivirals / Tamiflu</i> | | |
| | | <i>ignore medicine / tablets</i> | 1 | |
| | (iii) | resistant | 1 | |
| | | bacteria | 1 | |

in this order

[7]

Q6.

- (a) (i) small amounts of dead pathogens 1
- (ii) decrease 1
- by 60 (%)
allow from 70(%) to 10(%)
allow other correct data treatment 1
- (b) (i) penicillin 1
- (ii) any **two** from:
• antibiotics only kill bacteria
allow antibiotics do not kill viruses
• some bacteria are resistant (to antibiotics)
allow MRSA not killed by antibiotics
• (correct) antibiotics not always used
allow course not completed
• deficiency disease(s) not caused by bacteria **or** cannot be treated by antibiotics
• inherited disease(s) not caused by bacteria **or** cannot be treated by antibiotics
• 'lifestyle' diseases not caused by bacteria **or** cannot be treated by antibiotics
eg heart disease / cancer
if no other mark given allow 1 mark for not all diseases are caused by bacteria or some diseases are caused by viruses 2
- (c) bacteria grow faster
allow this is body temp (at which pathogens grow) 1

[7]

Q7.

- (a) droplet infection **or** aerosol infection
*do **not** accept airborne*
accept airborne droplets 1
- (b) so there is no large group which could catch the infection/pass on the infection
converse – if large numbers can't pass it on the virus is less likely to reach those few who are susceptible 1
- (c) (i) any **four** of the following points:-
example of a 3 mark answer: Lymphocytes produce specific antibodies.....

comment on specificity applied to antibodies or lymphocytes

(recognition by) lymphocytes;

(white cells) make antibodies;

antibodies destroy/neutralise the virus/antigen/protein subunit;

do not accept antibodies KILL viruses

accept white blood cells replicate

accept some white cells form memory cells/live a long time;

accept subsequent infection results in very rapid antibody production;

max 4

(ii) active;

1

(d) any **three** of the following points

Structure change in:

protein for binding to host cell;

accept changes in surface proteins (of protein coat)

spike containing enzyme;

changes in antigen

Fit: existing/circulating/old antibodies don't match new virus strain shape/new antigen/new binding protein;

Wrong antibodies: injection does not stimulate antibodies against all strains/different antigens;

accept wrong antibodies for 1 mark

max 3

[10]

Q8.

(a) microorganism / bacteria / virus / fungus that causes (infectious) disease

1

(b) reduce / stop use of (current) antibiotics

1

(reduce / stop use) for non-serious / mild / viral infections

allow ensure course is completed

allow use of variety of antibiotics

1

(c) (i) 40 °C

1

(ii) any **one** from:

- microorganisms grow / reproduce / work / act faster
- results / product acquired sooner

1

Q9.

any **four** from:

- cells used to treat diseases do not go on to produce a baby
- produces identical cells for research
- cells would not be rejected
- allow cells can form different types of cells
- (immature) egg contains only genetic information / DNA / genes / chromosomes from mother **or** there is only one parent
- asexual / no mixing of genetic material / no sperm involved / no fertilisation **or** chemical causes development
- baby is a clone
- reference to ethical / moral / religious issues
allow ethically wrong
***NB** cloning is illegal gains 2 marks*
ignore unnatural
- risk of damage to the baby
in correct context

[4]

Q10.

- (a) comparisons are **not** required but should be credited
 accept a clear indication of the statement even if incomplete

can develop into most other types of cell	1
each cell divides every 30 minutes	1
low chance of rejection by the patient's immune system	1

- (b) any **three** from:

- cheaper / only costs £1000
*this **must** be comparative*
ignore costs £1000
- can collect many (stem) cells
- adults give permission for their own bone marrow to be collected
comparisons are not required but should be credited
- safe

Q11.

Marks should **not** be awarded for simply copying the information provided
 A mark may be awarded for a comparison between treatments if the answer only involves copied information

any **four** from:

*For all 4 marks to be awarded, there must be at least 1
 pro and 1 con*

embryo stem cells – examples of

pros

- can treat a wide variety / lots of diseases / problems
- many available / plentiful
- using them better than wasting them
- painless

cons

- (possible) harm / death to embryo
- (relatively) untested / unreliable / may not work
*allow long term effects not known
 or may be more risky*
- embryo can't be 'asked' / 'embryo rights' idea

adult bone marrow stem cells – examples of

pros

- no ethical issues (in collection) **or** permission given
- quick recovery
- (relatively) safe
allow does not kill (donor) / low risk
- well tried / tested / know they work

cons

- operation hazards eg infection
- few types of cell / tissue produced **or** few diseases / problems treated
- painful so may deter donors

Conclusion to evaluation:

A reasoned conclusion from the evidence

1

[5]

Q12.

(a) 23

1

(b) chromosome nucleus gene cell
 2 3 1 4

1

(c) (i) any **one** from

(cells which are bigger) take up more space

(cells) have to get bigger **or** mature to divide

1

(ii) chromosomes duplicate **or**
make exact copies of self
accept forms pairs of chromatids

1

nuclei divide
*accept chromatids **or**
chromosomes separate*

1

identical (daughter) cells formed
*accept for example, skin cells make
more skin cells **or** cells are clones*

1

(d) any **two** from

Differentiation mark

babies need **or** are made of different types of cells **or** cells that have
different functions

*accept different cells are needed
for different organs*

Division or specialisation mark

as fertilised egg starts to divide each cell specialises to form a part of the body

*accept specialised cells make
different parts of the body*

Growth mark

specialised cells undergo mitosis to grow further cells

*accept cells divide **or** reproduce
to form identical cells*

2

[8]

Q13.

(a) chromosomes

1

(b) diagram showing four separate chromosomes two long and two short
(as in diagram 1)

*allow each chromosome shown as two joined chromatids
do **not** allow if chromosomes touching each other*

1

(c) (i) any **two** from:

- can grow into any type of tissue / named tissue
- used in medical research
- used to treat human diseases
- large numbers can be grown

2

(ii) any **two** from:

- expensive
- grow out of control / ref cancers
- may be rejected
- need for drugs (for rest of life)

2

[6]

Q14.

(a) any **two** from:

- right amount of nutrients **or** different / all foods
 - right amount of energy
 - for (individual) needs
- 'right amount' only needed once for both marks to be awarded*

2

(b) (i) ovaries / ovary

allow placenta

1

(ii) any **one** from:

- inhibits follicle stimulating hormone / FSH production
 - inhibits maturation of eggs
- ignore ref to site of production of FSH
allow stimulates LH production **or** stimulates preparation of womb lining*

1

(iii) any **one** from:

- stimulate muscle growth
 - used in (oral) contraceptives
- 1
- (c) small (rate of) decrease then bigger (rate of) decrease
- 1
- idea that change of rate (of decrease) at 900 (mg per day)
- If no other mark awarded allow 1 mark for decrease*
- 1
- (d) (i) gene(s) / nucleus / chromosome(s) / DNA
- allow ribosome*
- 1
- (ii) reduces production of cholesterol (by liver)
- allow idea of switching off gene for reductase (production)*
- allow switch off / reduce / inhibit reductase (production)*
- allow reduces absorption of cholesterol (by intestine)*
- allow statins (might) breakdown / destroy cholesterol*
- 1