Exampro GCSE Biology

Name: _____

B1 Chapter 1 Keeping Healthy
Foundation tier

Class: _____

Author:

Date:

Time: 70

Marks: 70

Comments:

Q1.   A healthy diet contains the right balance of different foods and the right amount of energy.

(a)   An unbalanced diet can lead to health problems.

One problem caused by an unbalanced diet is being overweight.

Name **one** health problem, other than being overweight, that is linked to an unbalanced diet.

....

(1)

(b)   Sugar is a type of carbohydrate.

(i)   Eating too much sugar can make a person overweight.

Suggest why.

....

....

(1)

(ii)   Which other substance in food is linked to people being overweight?

Draw a ring around the correct answer.

fat   **mineral ions**   **vitamins**

(1)

(c)   Sugar substitutes taste sweet.
Taking sugar substitutes helps to reduce the chance of becoming overweight.

The table below gives information about four sugar substitutes, **A**, **B**, **C** and **D**.

Sugar substitute	Number of times sweeter than sugar	Effects on health
A	× 200	Harmful to some people
B	× 250	Not known
C	× 600	Not known
D	× 500	None

(i)   Which sugar substitute, **A**, **B**, **C** or **D**, is the sweetest? [ ]

(1)

(ii) A person is advised to use sugar substitute **D** and **not** sugar substitutes **A, B** or **C**.

Suggest a reason why.

....

....

(1)

(iii) A food has a sugar substitute in it.

Why must it say on the packet which sugar substitute it is?

....

....

(1)
(Total 6 marks)

Q2.   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)

Q3. The table is from a packet of biscuits.

Average values	Per 100 g	Per biscuit	UK guideline daily amounts	
			Adults	**Children (5 – 10 years)**
Energy	1974 kJ	446 kJ	8500 kJ	7500 kJ
Protein	7.1 g	1.1 g	45 g	24 g
Carbohydrate	62.8 g	9.3 g	230 g	220 g
Fat	21.3 g	3.2 g	70 g	70 g
Sodium	3.6 g	0.5 g	2.4 g	1.4 g

One day a ten-year-old child ate a whole packet of the biscuits.
The biscuits in the pack had a mass of 400 g.

(a) (i) How many grams of carbohydrate did the child eat?

....

....

Number of grams ....

(2)

(ii) The amount of carbohydrate you calculated in part (a)(i) was more than the UK guideline daily amount for the child.

How much more?

....

....

Number of grams ....

(1)

(b) Give **two** possible health effects on the child of eating so many biscuits every day.

1 ....

2 ....

(2)
(Total 5 marks)

Q4. Students tested eight different foods, **A** – **H**, for carbohydrate, fat and protein.

The table shows the students' results.

Food	Carbohydrate	Fat	Protein
A	✗	✓	✓
B	✗	✓	✓
C	✓	✓	✓
D	✓	✗	✓
E	✗	✗	✗
F	✓	✗	✗
G	✓	✗	✗
H	✓	✗	✓

Key	
✓ = present	
✗ = not present	

(a) (i) How many of the foods contained **only** carbohydrate?

....

(1)

(ii) Which of the foods contained carbohydrate **and** fat **and** protein?
Tick (✓) **one** box.

B, **C** and **D** only ☐

B and **D** only ☐

C only ☐

(1)

(b) A person's diet should contain carbohydrate **and** fat **and** protein.

Give **two** reasons why.

1...

....

2...

....

(2)

(c) As well as carbohydrate, fat and protein, the body also needs vitamins and mineral ions.

(i) Why does the body need vitamins and mineral ions?

....

(1)

(ii) Draw a ring around the correct answer to complete the sentence.

Compared to the mass of carbohydrates, the body needs

a greater
a smaller
the same

mass

of vitamins and mineral ions.

(1)
(Total 6 marks)

Q5. (a) Use words from the box to complete the sentences about curing disease.

antibiotics	**antibodies**	**antitoxins**	**painkillers**	**statins**

The substances made by white blood cells to kill pathogens

are called ....

The substances made by white blood cells to counteract poisons produced by

pathogens are called ....

Medicines which kill bacteria are called ....

(3)

(b) The MMR vaccine protects people against three diseases.

Write down the names of **two** of these diseases.

1 ....

2 ....

(2)

(c)   All vaccinations involve some risk.

The table shows the risk of developing harmful effects:

•   from the disease if a child is **not** given the MMR vaccine

•   if a child **is** given the MMR vaccine.

Harmful effect	Risk of developing the harmful effect from the disease if not given the MMR vaccine	Risk of developing the harmful effect if given the MMR vaccine
Convulsions	1 in 200	1 in 1000
Meningitis	1 in 3000	Less than 1 in 1 000 000
Brain damage	1 in 8000	0

A mother is considering if she should have her child vaccinated with the MMR vaccine.

Use information from the table to persuade the mother that she should have her child vaccinated.

....

....

....

....

....

(2)
(Total 7 marks)

Q6.   Controlling infections in hospitals has become much more difficult in recent years.

(a)   Explain why MRSA is causing problems in many hospitals.

....

....

....

....

(2)

(b)   The pioneer in methods of treating infections in hospitals was Ignaz Semmelweiss. He observed that women whose babies were delivered by doctors in hospital had a death rate of 18% from infections caught in the hospital. Women whose babies were delivered by midwives in the hospital had a death rate of 2%. He observed that doctors often came straight from examining dead bodies to the delivery ward.

(i)   In a controlled experiment, Semmelweiss made doctors wash their hands in chloride of lime solution before delivering the babies. The death rate fell to about 2% – down to the same level as the death rate in mothers whose babies were delivered by midwives.

Explain why the death rate fell.

....

....

(1)

(ii)   Explain how Semmelweiss's results could be used to reduce the spread of MRSA in a modern hospital.

....

....

....

....

(2)
(Total 5 marks)

Q7.   Read the passage.

MMR is a triple vaccine used to protect against three viral diseases. Weakened strains of the three viruses are injected together. The weakened strains cause the body to become immune to the diseases. The vaccine is usually given to children between one and two years old.

Some people believe that the vaccine can trigger a response called autism in children. Autism damages the mental and social development of the child. The vaccine can also lead to problems in the large intestine.

(a)   What are the **three** diseases that the MMR vaccine protects against?

....

(1)

(b)   Use the information in the passage and your own knowledge to evaluate whether a parent should or should not have their child vaccinated.

To gain full marks in this question you should write your ideas in good English. Put them into a sensible order and use the correct scientific words.

....

....

....

....

....

....

....

....

....

....

....

....

(5)
(Total 6 marks)

Q8.   Read the passage about antibiotics.

> People do not always agree about the use of antibiotics in food production.
>
> If we put low doses of antibiotics in feed for animals such as cattle and sheep, it helps to produce high-quality, low-cost food. Antibiotics help to keep animals disease-free. They also help animals to grow. Animals get fatter quicker because they do not waste energy trying to overcome illness.
>
> The use of antibiotics in livestock feed means that there is a higher risk of antibiotic-resistant bacteria developing. The rapid reproduction of bacteria means there is always a chance that a population of bacteria will develop which is antibiotic-resistant. These could be dangerous to human health.

(a)   *To gain full marks for this question you should write your ideas in good English. Put them into a sensible order and use the correct scientific words.*

Explain how a population of antibiotic-resistant bacteria might develop from non-resistant bacteria.

....

....

....

....

....

....

(3)

(b)   Do you think that farmers should be allowed to put low doses of antibiotics in animal feed? Explain the reasons for your answer.
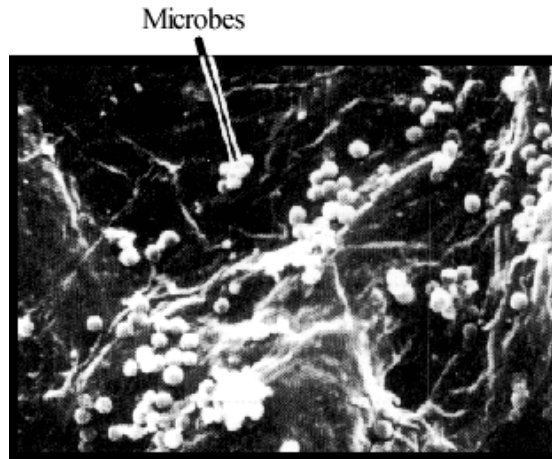
....

....

....

....

(2)
(Total 5 marks)

Q9. The photograph below shows human skin highly magnified. Groups of microbes can be seen on the skin.

Microbes

Give **two** ways in which the body protects itself from these microbes.

1 ....

....

2 ....

....

(Total 2 marks)

Q10. (a) Name **two** types of microbe which cause disease in humans.

1 ....

2 ....

(2)

(b) Why do we feel ill when we have an infectious disease?

....

....

(1)

(c) Give **two** ways in which white blood cells protect us against disease.

1 ....

....

2 ....

....

(2)

(d)   Explain, as fully as you can, how immunisation protects us against a named disease.

Name of disease: ....

How immunisation protects us: ....

....

....

....

....

(3)
(Total 8 marks)

##

Read the following passage.

One of the deadliest diseases seems to be making a comeback in Britain.
Doctors are alarmed at the rising number of cases of tuberculosis (TB).
TB is caused by microbes called bacteria. When people carrying the TB
bacteria cough or sneeze, the TB bacteria get into the air. Other people may
then breathe them in.

(a)   Which organs will be infected first when someone breathes in the TB bacteria?

....

(1)

(b)   Explain how the TB bacteria inside the body may cause disease.

....

....

(2)

(c)   Name **one other** group of microbes that often causes disease.

....

(1)

(d)   Suggest why people who live in overcrowded areas are more likely to catch TB than
people who live in less crowded areas.

....

....

(1)

(e)   People infected with a small number of TB bacteria often do **not** develop the disease.

Explain, as fully as you can, how the body defends itself against the TB bacteria.

....

....

....

....

....

....

(3)
(Total 8 marks)

Q12.   Students in a school investigated the effect of five different antibiotics, **A**, **B**, **C**, **D** and **E**, on one type of bacterium.

The students:

*   grew the bacteria on agar jelly in a Petri dish

*   soaked separate paper discs in each of the antibiotics

*   put the paper discs onto the bacteria in the Petri dish

*   put the Petri dish into an incubator.

The diagram shows what the Petri dish looked like after 3 days.
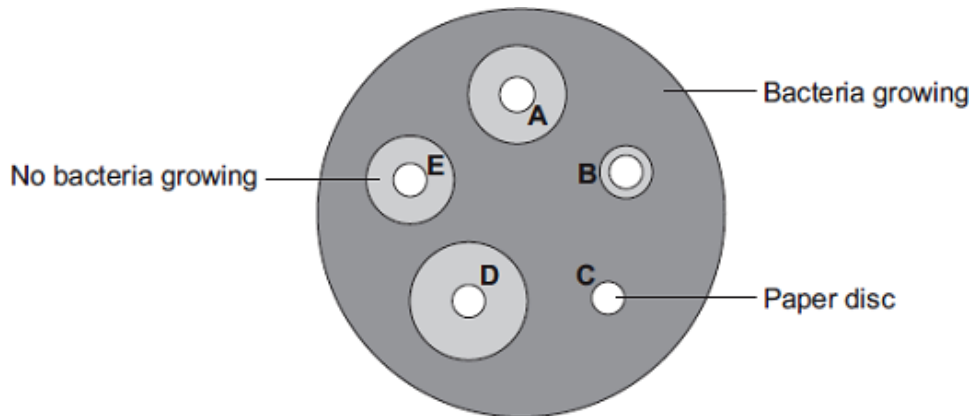
(a)   (i)   What is the maximum temperature the incubator should be set at in the school?

Draw a ring around your answer.

    10°C   25°C   50°C

(1)

(ii) Draw a ring around the correct answer to complete the sentence.

The incubator should **not** be set at a higher temperature because the higher

temperature might help the growth of

pathogens.
toxins.
viruses.

(1)

(b) Which antibiotic, **A**, **B**, **C**, **D** or **E**, would be best to treat a disease caused by this type of bacterium?

Write your answer in the box.

Give the reason for your answer.

....

....

(2)

(c) Antibiotics **cannot** be used to treat diseases caused by viruses.

Why?

Tick (✓) **one** box.

Viruses are not pathogens

There are too many different types of virus

Viruses live inside cells

(1)
(Total 5 marks)

M1. (a) (Type 2) diabetes / heart disease / deficiency disease / named

allow a relevant health problem

*ignore obesity **or** over / under weight / anorexia*

1

(b) (i) provides more (energy / sugar) than is used

idea of sugar being high in / having a lot of energy eg contains a lot of calories

*allow it is turned to fat **or** stored (as fat)*

1

(ii) fat

1

(c) (i) C

1

(ii) no health problems

allow as others (may) have (possible) health problems

ignore reference to sweetness

1

(iii) idea of informed choice

eg in case you have health problems / allergies

allow legal requirement

ignore diabetes

1

[6]

M2. (a) pathogens

1

(b) (i) A disease affecting people in many countries

1

(ii) birds fly / migrate

accept converse

OR

human contact with birds more likely

birds not contained / difficult to control movement

OR

there are more birds (than pigs)

1

(c) (i) antibiotics (only) <u>kill</u> bacteria
             ignore flu is caused by a virus unqualified

        OR

        antibiotics don't <u>kill</u> viruses
             ignore virus resistant / immune

                                                                              1

     (ii) painkillers
             accept any correct named painkiller, eg aspirin or paracetamol
             allow antivirals / Tamiflu
             ignore medicine / tablets

                                                                              1

     (iii) resistant

                                                                              1

           bacteria

                                                                              1

             in this order

                                                                        [7]

M3.   (a) (i) 251.2
                 *award **2** marks for correct answer, irrespective of working.*
                 *if incorrect or no answer 62.8 x 4 or equivalent gains **1** mark*

                                                                              2

         (ii) 31.2
                 allow ecf from (a)(i); answer to (a)(i) – 220

                                                                              1

(b)   any **two** from:

- overweight / obesity **or** increased BMI
  allow get fat
  ignore get heavier

- (Type 2) diabetes
  allow high blood sugar

- high blood pressure

- cardiovascular / heart disease **or** heart problems **or**
  disease of blood vessels **or** clogged arteries

- high cholesterol

- arthritis / worn joints

- tooth decay

2

[5]

M4.   (a)   (i)   2 / two
                        allow F and G

1

(ii)   **C** only

1

(b)   any **two** from:

ignore reference to health / strength

- balanced diet / otherwise malnourished

- (release) energy

- build cells / growth / repair
  or allow:
  - *carbohydrates for energy (1)*
  - *fat for energy / insulation (1)*
  - *protein for growth / repair (1)*

2

(c)   (i)   health
                *do **not** allow energy / insulation / growth / repair*
                allow reference to specific function of vitamin or ion, eg prevent
                scurvy / harden bones
                allow to prevent deficiency diseases
                ignore strength / fitness / prevent diseases

1

(ii)   a smaller

1
[6]

M5.   (a)   antibodies

1

antitoxins

1

antibiotics

1

(b)   any **two** from:

- measles

- mumps

- rubella / German measles

2

(c)   less / low / no chance of getting named or all condition(s) if vaccinated

1

quantitative figure(s) eg 5 times less likely to get convulsions

1
[7]

M6.   (a)   any **two** from:
                  virus is neutral

- resistant to (most) antibiotics

- contagious **or** easily passed on **or** reference to open wounds

- patients ill therefore less able to combat disease

2

(b)   (i)   chloride of lime / hand washing killed bacteria (picked up from corpses)
                  allow disease / germs / infection / disinfectants

1

(ii)   people to wash hands after contact with patient

1

so <u>bacteria</u> / <u>pathogen</u> / <u>MRSA</u> not transferred to other patient

1
[5]

M7.   (a)   measles mumps rubella / German measles
                  any order

1

(b) **Quality of written communication**:

*for giving at least **two** statements linked to vaccination*

1

any **four** from:

*NB max **3** marks for only one side of argument*
*do **not** accept economic argument*

a valid reference to pain

eg pain of vaccination / disease

should

protect against diseases

measles / mumps / rubella are dangerous diseases / can cause lasting harm / death

cannot be treated by antibiotics

problem of epidemics

should not

may suffer autism / damage to mental / social development

may suffer large intestine disorders

separate vaccines available that cause no / less problems

4

[6]

M8. (a) **Quality of written communication**
The answer to this question requires ideas in good English in a sensible order with correct use of scientific terms. Quality of written communication should be considered in crediting points in the mark scheme

idea of mutation **or** variation

*do **not** allow 'bacteria get used to antibiotics' **or** idea that antibiotics change the bacteria **or** 'bacteria become immune' **or** references to adaptation or evolution*

1

(resistant cells) survive antibiotic

1

(resistant cells) breed

1

(b)　**EITHER** (yes)

　　keep animals disease free (1) so grow faster (1 mark) **or** live longer

　　OR (no)

　　resistant bacteria may develop (1)
　　risk to human **or** animal health (1)
　　　　　allow bacteria become resistant / immune

　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　2

　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　[5]

M9.　　blood clots to seal cuts;
　　kills microbes which enter
　　　　　each for 1 mark
　　　　　(allow higher level answers)

　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　[2]

M10.　　(a)　virus
　　　　bacteria (allow fungi, protozoa)

　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　2

　　(b)　reference to poisons/toxins produced by microbes

　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　1

　　(c)　2 of e.g.
　　　　engulf microbes
　　　　produce antibodies
　　　　produce antitoxins

　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　2

　　(d)　dead/weakened microbes (relevant to named disease)
　　　　method e.g. injection/ swallowed (relevant to named disease)
　　　　body responds by producing antibodies

　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　3

　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　[8]

M11.　　(a)　lungs
　　　　　　　for 1 mark

　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　1

　　(b)　microbes reproduce rapidly produce poisons
　　　　　　　for 1 mark each

　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　2

(c)   viruses/fungi/protozoa

              for 1 mark

1

(d)   more likely to come into contact with infected people/more TB bacteria in air

              for 1 mark

1

(e)   white cells ingest bacteria
produce antibodies which destroy bacteria
produce antitoxins which counteract poisons produced by bacteria

              for 1 mark each

3

[8]

M12.   (a)   (i)   25°C

1

        (ii)   pathogens

1

(b)   **D**

1

        more / most bacteria killed

              accept biggest area / ring where no bacteria are growing

1

(c)   viruses live inside cells

1

[5]