Answers to Further Questions in GCSE Biology for You (5th Edition)

On the following pages we show the detailed Answers and Mark Schemes for the Further Questions on Humans as organisms.

The answers have been prepared by an Examiner using the mark schemes published by each Examination Board. They are laid out in the same way as the pages of Further Questions in the Students’ Book.

For the Student:

⦁ It is very important that you are able to answer the questions on your own, using your own knowledge of Biology. 
  So it is important that you have a go at the questions first, and then afterwards you can check your answers using these pages.
  If you get a question wrong, try to work out where you have made an error. Discuss it with your teacher if you are not sure.

⦁ Be aware that in some answers the mark is for the idea in your own words (not necessarily the exact words shown), whereas in other answers the number and unit must be exactly correct.

For the Teacher:

⦁ You will find these sheets useful when marking the students’ homework, or when going over the Further Questions in class.
  The Answer Sheet will also enable you to assess how much work is involved in answering the questions when planning how much homework to set.

⦁ The PDFs are available for you to hand out to the students if you wish (perhaps as part of a Revision Programme).
  As with all mark schemes there may be alternative credit-worthy statements for qualitative answers (for the idea) and this may need to be explained to your students. Quantitative answers, however, are generally more prescriptive and your students may need to be encouraged to show the exact numerical value and the appropriate unit.

Gareth Williams
Food and digestion

1 (a) (i) 1 mark for 31;
(ii) 1 mark for obese;
(iii) 1 mark for 7 kg.
(b) 1 mark for each of the following ideas:
tall people are heavier than short people;
but they may not be overweight.
(c) (i) 1 mark for answer between 64–65 g
(ii) 1 mark for idea that Neil’s son is still
growing but Neil is not.

Total 7 marks

2 (a) \( \frac{1}{2} \) mark each for:
A – gullet or oesophagus;
B – stomach;
C – large intestine;
D – anus;
E – small intestine;
F – liver.
(b) 1 mark each for:
(i) E;
(ii) C;
(iii) D.

Total 6 marks

3 (a) 1 mark for type of food.
(b) 1 mark for any one from:
Use a smaller mass / piece of food;
Use a larger volume of water.

c) 1 mark for 66°C.
(d) 2 marks for 6930 J. (Allow ecf)
(allow 1 mark for a correct substitution:
\( 4.2 \times 25 \times 66 \) / ecf)
(e) 2 marks for 5.8 / 5.78 / 5.775 (kJ/g)
(Allow ecf)
(allow 1 mark for 5775 (J))
(f) 1 mark each for any two from:
The food was not completely burnt;
Energy lost to air;
Energy lost to boiling tube / apparatus;
Food fell off mounted needle.

Total 9 marks

4 (a) 1 mark for fatty acids and glycerol.
(b) 1 mark for each of the following ideas:
emulsifies fats or breaks down large drops
into smaller droplets;
which increases the surface area of fats;
for lipase (or enzymes) to act upon.
(c) 1 mark for each of the following ideas:
fats may accumulate inside blood vessels;
leading to increased risk of heart attack.

Total 6 marks

Breathing and respiration

5 (a) 1 mark for each of two of the following ideas:
exercise/contraction of muscles transfers
energy;
energy/ATP released by respiration;
from glucose/sugar (or equation for
respiration could be given);
more rapid respiration releases more
energy.
(b) 1 mark for each of four of the following ideas:
increased blood circulation near body
surface/skin/reference to dilation of
arterioles/vasodilation/increased blood
circulation in capillaries (in skin);
increased loss of heat from skin surface (by
convection);
increased production/secretion of sweat;
respiration could be given);
more rapid respiration releases more
energy.
(c) (i) 1 mark for the following idea:
shorter time (faster run) uses more
oxygen / longer time (slower run) uses
less oxygen.
(ii) 1 mark for each of the following ideas:
more oxygen;
allows faster rate of respiration/needed
for more muscle contraction (for faster
running);
releases more energy.

Total 10 marks
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6  (a) 1 mark for trachea or windpipe.
(b) 1 mark for the idea that the walls are strengthened by rings of cartilage.
(c) 1 mark for the idea that the flow of air in and out of the lungs must not be obstructed.
(d) 1 mark for each of the following ideas:
  volume would increase; pressure would decrease.
(e) 1 mark for the idea of contraction of diaphragm muscles.
(f) (i) 1 mark for 16 (4 × 4);
(ii) 1 mark for 3 dm³;
(iii) 1 mark each for:
  A and B resting;
  C and D jogging;
  E and F running hard.

Total 11 marks

7  (a) 1 mark each for two of:
  bronchitis;
  emphysema;
  lung cancer.
(b) (i) 1 mark for 2;
(ii) 1 mark for each correct row:
  CO₂ high low;
  O₂ low high.
(c) (i) 1 mark for white blood cell;
(ii) 1 mark for one of:
  engulfs microbes;
  produces antibodies to kill microbes;
  produces antitoxins to neutralise microbial proteins.

Total 7 marks

 Blood and circulation

8  (a) (i) 1 mark for 40;
(ii) 1 mark for 3.
(b) (i) 1 mark for transport of oxygen
  (or transport of some carbon dioxide);
(ii) 1 mark each for two of the following ideas:
  contain haemoglobin (combines with and releases the oxygen, or carbon dioxide);
  large surface area / biconcave shape;
  no nucleus.
(c) 1 mark for the idea that the carbon monoxide combines with the haemoglobin so less haemoglobin is available to transport oxygen.
(d) (i) 1 mark for the idea that red blood cells have no nucleus;
(ii) 1 mark for 5 billion (5 thousand million or 5 000 000 000);
(iii) 1 mark each for the following steps in the calculation:
  1 cm³ contains 5 billion (see working above) so 5000 cm³ contain 25 thousand billion;
  but average life of a red blood cell is about 100 days, so average number of red blood cells that have to be made each day is 0.25 thousand billion. (Note: It would probably be easier to convert this to powers of 10, to handle all the zeros ie. 0.25 × 10¹².)
(e) (i) 1 mark for each of the following ideas:
  bone marrow from near relative is more likely to be of same tissue type;
  more compatible or not generate an immune response;
(ii) 1 mark for each of the following ideas:
  this would prevent phagocytes attacking;
  engulfing the foreign cells.

Total 10 marks

9  (a) 1 mark each for:
  axes labelled correctly;
  all plotted correctly.
(b) 1 mark for each of the following ideas:
  increases with age up to 64;
  then drops with age.
(c) 1 mark for each of the following ideas:
  rapid increase;
  higher than men;
  reasonable suggestion eg. caused by menopause.
(d) (i) 1 mark for idea of restricting blood flow;
(ii) 1 mark for idea of stopping blood flow to heart muscle;
  1 mark for consequence eg. less oxygen to heart muscle.

Total 10 marks

10 (a) 1 mark for 3 cm.
(b) 1 mark for 150 µm / micrometres.
(c) 1 mark for (×) 200.
(d) 1 mark for any two differences.
  1 mark for two correctly linked reasons.
  Difference: (vein has) a larger lumen / internal diameter.
  Reason: (so) resistance to blood flow is low.
  Difference: (vein has) thinner wall / elastic tissue / muscle layer.
  Reason: blood is at a lower pressure or blood exerts less pressure on wall.
  Difference: (vein has) values.
  Reason: to prevent blood flowing in the wrong direction / backwards.

Total 5 marks
11 (a) 1 mark for 84.
(b) 1 mark for the idea that his pulse showed the smallest increase during exercise.
(c) 1 mark for each of the following ideas:
all the students should exercise in the same way;
they measure their pulse more frequently after exercise.

Total 4 marks

12 (a) (i) 1 mark for muscular.
(ii) 1 mark for 7.
(iii) 1 mark for an electrical device.
(b) (i) 3 marks for correct sequence:
5 7 2.
(ii) 1 mark for 3.
(c) (i) 1 mark for prevent backflow (of blood) / allow flow in only one direction / in the correct direction.
(ii) A (no mark, but max 2 marks if incorrect)
1 mark for each of:
2 / atrium contracts / pressure in 2 increases;
blood pushes ball (down / towards ventricle / towards 5);
(allow this point even if valve in wrong part of heart)
(opens valve which) allows blood into 5 / ventricle;
(or converse points re closing the valve)
(d) (i) 1 mark each for:
involvement of platelets / e.g. platelets trigger clotting process / release enzyme(s) / release ‘clotting factors’;
fibrinogen to fibrin or meshwork formed (which traps blood cells).
(ii) 1 mark each for any four from:
(to gain 4 marks candidates should include at least one advantage and one disadvantage)
Advantages
(improved circulation / O₂ supply)
provides:
more cell respiration;
more energy released;
(more) active life / not so tired / more physical activity.
Disadvantages
danger of surgery / operation;
infection from surgery / operation;
value may need replacing;
clots may form and block blood vessels;
(may need to take anti-coagulants – e.g. warfarin)
clots may cause heart attacks / strokes.

Total 17 marks

13 (a) 1 mark for each of the following ideas:
increased; rate of respiration.
(b) 1 mark for each of the following ideas:
much of the energy released during respiration is released as heat;
which causes the body temperature to increase.
(c) 1 mark for the idea that a regulatory method, eg. sweating, is switched off by the change in body temperature which it brings about.
(d) 1 mark for each of the following ideas:
it is converted to glycogen;
which is stored in the liver or muscles.
(e) (i) 1 mark for each of two of the following ideas:
insulin is produced by the pancreas in response to the increased blood sugar level after each meal;
this insulin is then destroyed by the body;
the single dose would be effective for one or two meals only.
(ii) 1 mark for each of the following ideas:
either lower blood sugar as a result of exercise;
would lead to a decrease in insulin production.
or lower blood sugar as a result of exercise;
would lead to an increase in glucagon production.

Total 11 marks

14 (a) 1 mark each for:
oxygen (left-hand-side of equation);
carbon dioxide (right-hand-side of equation).
(b) (i) 1 mark for each of the following stages in the calculation:
total water gain in one day = 2500 cm³;
total water loss in one day from exhaled air,
skin and faeces is 1000 cm³, so rest lost in urine must be 1500 cm³
(2500 cm³ – 1000 cm³).
(ii) 1 mark for each of the following ideas
(or the converse arguments):
when blood more concentrated (less water in the blood);
more water reabsorbed from the kidneys / more water passes from kidney filtrate back into the blood;
at collecting duct.
(Could also make reference to more ADH / antidiuretic hormone being secreted into blood.)
(c) 1 mark for each of the following ideas:
- urea passes out of blood into liquid (in dialysis machine);
- by diffusion;
- concentration of urea in blood falls.

(d) (i) 1 mark for each of the following ideas:
- (transplant is) permanent / long-term;
- (transplant is) less trouble / avoids need for person to be out of action / avoids need for regular dialysis / etc.

(ii) 1 mark for each of the following ideas:
- possibility of rejection (of transplant tissue);
- failure of kidney again in future.
(Note: Depending on syllabus / requirements, it may be appropriate to award a mark for suitable ethical consideration.)

Total 14 marks

15 (a) (i) 1 mark for protein;
(ii) 1 mark for idea that protein molecules are too large (to pass through walls in glomerulus).

(b) 1 mark for idea that water is reabsorbed / passes back from filtrate into blood (so urea becomes more concentrated in the liquid in the bladder).

(c) (i) 1 mark each for three of the following ideas:
- blood passes into dialysis tubing (of dialysis machine);
- tubing differentially permeable;
- tubing surrounded by liquid;
- composition of this liquid is the same as that of blood except there is no urea;
- urea (plus other waste products) pass from blood to dialysis liquid;
- by diffusion;
- along concentration gradient;
- reference to flow of liquids in opposite directions / countercurrent flow;
- reference to method of attachment or linking dialysis tubing into blood vessels of person.

(ii) 1 mark for concentration of 0.35%;
then 1 mark for explanation with the idea that there is then no net flow of salts across the membrane / dialysis tubing (from blood to fluid or fluid to blood) / composition of blood stays the same.

Total 8 marks

16 (a) (i) 1 mark for hormone;
(ii) 1 mark for idea of decrease in water content of the blood;
(iii) 1 mark for in the blood plasma.

(b) (i) 1 mark each for any five of the following steps:
- the water is absorbed into the blood stream;
- increasing the water content;
- pituitary gland is no longer stimulated;
- the production of ADH ceases;
- ADH is not transported to the kidney;
- kidney reabsorbs less water.

(ii) 1 mark for the idea that it takes time for the water to be absorbed into blood stream and change in blood concentration to be detected by pituitary.

Total 9 marks

17 (a) 1 mark each for:
- detected by receptors in skin;
- impulse sent along sensory neurone;
- to spinal cord / CNS;
- impulse sent along motor neurone;
- to (hand/arm) muscles / effectors.
(to gain marks these need to be in the correct sequence)

(b) (i) 1 mark each for:
- conclusion: as diameter increases so does speed of impulse;
- but there are exceptions, e.g. all speeds for B are greater than for C even though the diameters overlap;
- (must include example, but allow other valid examples from data)

(ii) 1 mark each for:
- cannot make a (valid) conclusion;
- although D has lowest speeds it also has the smallest diameter (and the results might be due to this).

Total 9 marks

18 (a) 1 mark each for:
- rays converge;
- but do not meet.

(b) (i) 1 mark each for:
- Explanation of what Nikita needs, i.e. more convergence;
- Lens A gives more convergence / lens B does not.

(ii) 1 mark each for:
- Lens thinner at centre rather than edges;
- Therefore it will diverge;
- Therefore the defective lens must converge light rays too much;
- Therefore the eye defect is short sight.

(c) 1 mark each for any four from:
- Damaged tissue difficult to get to;
- Treatment might damage other areas;
Nervous tissue highly specialised / differentiated; Nervous tissue / neurons cannot re-grow; Therefore treatment must not cause further damage.

Total 12 marks

19 (a) Please refer to the marking instructions at the beginning of this mark scheme for guidance on how to mark this question.

Level 3 (5–6 marks)
Explains fully the physical changes that occur during the menstrual cycle AND Links them correctly to evidence from the diagram and graphs. There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.

Level 2 (3–4 marks)
Explains two physical changes that occur during the menstrual cycle AND Links them correctly to evidence from the diagram and graphs. There is a line of reasoning presented with some structure. The information presented is relevant and supported by some evidence.

Level 1 (1–2 marks)
Explains one physical change that occurs during the menstrual cycle AND links it correctly to evidence from the diagram and graphs. The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear.

Examples of physical and hormonal menstrual cycle changes:
- Uterus becomes thicker because it becomes more vascular;
- Ovulation is when an egg is released from an ovary;
- Ovulation occurs when a follicle ruptures / bursts;
- Has to be an egg present in the oviduct / Fallopian tube for fertilisation to occur;
- High progesterone and thick uterus lining required for successful implantation.

Examples of interpretation of graphs and diagram:
- Days 7–14 uterus lining thickens / develops;
- Thickening of uterus occurs under the influence of a rise in oestrogen;
- Day 14 is when ovulation occurs / an egg is released;
- Follicle bursts due to a peak of LH;
- Days 15–28, fertilisation could occur;
- Uterus lining stays thick from days 21–28.

0 marks for no response or no response worthy of credit.

(b) 1 mark each for any three from:
- Condom is least effective / has highest percentage of pregnancies;
- Hormone implants are most effective / have lowest percentage of pregnancies;
- Birth control pill still has quite a high percentage of pregnancies;
- Condom may burst / fall off;
- Implant is a long-term method;
- People may forget to take the (birth control) pill.

1 mark for choice for couple, e.g. implant as most effective and will suit them as married and in no hurry to have children. (allow any other justified choice)

Total 10 marks

Disease

20 (a) 1 mark each for:
- Gonorrhoea – Bacterium;
- Malaria – Protist;
- Measles – Virus.

(b) Please refer to the marking instructions at the beginning of this mark scheme for guidance on how to mark this question.

Level 2 (3–4 marks)
A coherent description of features of parts of the body and how the feature works to reduce the entry of pathogens is given.

Level 1 (1–2 marks)
Relevant features of parts of the body to reduce the entry of pathogens are described.

0 marks for no relevant content.

Indicative content:
- trachea has mucus; (mucus) traps pathogens;
- trachea has cilia; (cilia) moves mucus out of trachea;
- stomach produces acid; (acid) kills pathogens;
- skin acts as a barrier.

(c) dependent variable:
1 mark for number of times mosquitos landed on socks.

control variable:
1 mark for any one from:
- number of mosquitoes in each container;
- length of time socks worn;
- dampness of socks;
- same type of socks;
- size of container;
- time;
- temperature;
- species of mosquito;
- age of mosquito.

(d) 1 mark for use worn socks or use chemical from worn socks.
1 mark for to attract / trap infected mosquitoes.
(accept: wear clean socks / change socks regularly; to reduce the chance of attracting mosquitoes)

(e) 1 mark each for:
less chlorophyll present;
(so) less light absorbed;
(so) reduced photosynthesis or (so) less sugar / food made.

Total 14 marks

21 (a) 1 mark for any one from:
not all deaths recorded;
not all causes of deaths recorded.
(allow cause may not be known)

(b) 1 mark for antibiotics do not kill viruses.
(allow antibiotics only kill bacteria)

(c) 2 marks for:
Dose – The concentration of the drug to be used and how often the drug should be given;
Efficacy – Whether the drug works to treat the illness;
Toxicity – Side effects making the person ill.
(1 mark for 1 or 2 correct)

(d) 1 mark for any one from:
to prevent false claims;
to make sure the conclusions are correct / valid;
to avoid bias.

(e) 1 mark each for:
some people would be immune to EVD;
if less people (in a population) have EVD less chance of it being passed on.
(allow those vaccinated would not contract the disease)

(f) Please refer to the marking instructions at the beginning of this mark scheme for guidance on how to mark this question.

Level 3 (5–6 marks)
A detailed and coherent evaluation is provided which considers a range of arguments for and against the use of unlicensed drugs and comes to a conclusion consistent with the reasoning.

Level 2 (3–4 marks):
An attempt to give arguments for and against the use of unlicensed drugs is made. The logic may be inconsistent at times but builds towards a coherent argument.

Level 1 (1–2 marks):
Discrete relevant points made. The logic may be unclear and the conclusion, if present, may not be consistent with the reasoning. 0 marks for no relevant content.

Indicative content:
pros
might save some lives;
vaccine could reduce chance of future outbreaks;

cons
could be dangerous or vaccine could harm a healthy person;
goes against legislation / laws governing drug development;
might set a precedent for other drugs not to be fully tested;
unfair as not available to the African people.
Plus a justified conclusion.

Total 13 marks

22 (a) 1 mark each for:
a chemical (usually) made by fungi / microbes;
that kills (other) microbes / kills bacteria.

(b) (i) 1 mark each for:
any higher and the bacteria might be killed / bacterial enzymes denatured;
any lower and the erythromycin would diffuse slower / bacteria would reproduce more slowly so takes longer to get the results.
(allow optimum temperature for the bacteria / bacterial enzymes)

(ii) 1 mark for prevent contamination by other microbes.
(not germs / bugs)

(c) (i) 2 marks for correct area 452 (mm²)
1 mark for not resistant.
(allow one mark for correct calculation and interpretation using incorrect radius)

(ii) 1 mark each for:
only one plate used / no replicates;
only gives limited information, i.e. one of three choices.

(d) (i) 1 mark each for:
coat is digested;
by enzymes present in small intestine.

(ii) Please refer to the marking instructions at the beginning of this mark scheme for guidance on how to mark this question.

Level 3 (5–6 marks)
Explains the shapes of the two graphs in the effectiveness/safety of the drugs delivery system. There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.

Level 2 (3–4 marks)
Explains the shapes of the two graphs the total dosage of the drugs. There is a line of reasoning presented with some structure.
The information presented is relevant and supported by some evidence.

**Level 1 (1–2 marks)**
Simply describes the patterns in the graph
The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear.

0 marks for no response or no response worthy of credit.

**Indicative content:**
The relative effectiveness of the two delivery systems:
*links this to the advantages / disadvantages of keeping a steady, intermediate level in the blood;*
*with tablet high levels may be toxic;*
*if reduce the dose, then when levels low it may not kill all bacteria;*
*reference to allowing resistant strains to develop.*

Apply knowledge to demonstrate an understanding of how the capsules and tablets work in delivering the drug – any statement regarding the total dosage for the two delivery methods;
*dosage rises rapidly because of rapid absorption into the bloodstream;*
*dosage falls fast because it is rapidly broken down;*
*capsules allow staggered release of drug dosage;*
*this is because walls are different thicknesses of the capsule;*
*therefore different digestion time;*
*conventional tablet releases drug all at once;*
*tablet may not have a coating.*

Apply knowledge and understanding in reading the graphical information – simple description of the patterns of the two lines on the graph.

**Total 18 marks**

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**Drugs**

24 (a) 1 mark for each of the following:
*an x-axis scale from 0–18 litres filling graph paper horizontally;*
*a y-axis scale from 0–35 deaths per 100 000 people per year filling graph paper vertically;*
*all bars correctly plotted;*
*bars labelled by country.*

(b) 1 mark for the idea that the higher the amount of alcohol consumed, the higher the number of deaths from liver disease.

(c) 1 mark for the idea that some other factor could be causing deaths from liver disease in Germany eg. diet.

**Total 6 marks**

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25 (a) 1 mark each for any two of the following points:
*medication to prevent further damage / reduce symptoms;*
*surgery to repair the damage;*
*exercise to reduce weight.*

(b) (i) 1 mark for any one of the following points:
*similar BMI;*
*same gender profile;*
*similar amount (and type) of exercise.*

(ii) 1 mark for each of the following points included in a plan:
*weigh the 40 obese people;*
half follow the new diet and half keep their normal diet; after a fixed time period re-weigh the 40 people.

(c) Answers will be credited according to candidate’s deployment of knowledge and understanding of the material in relation to the qualities and skills outlined in the generic mark scheme. The indicative content below is not prescriptive and candidates are not required to include all the material which is indicated as relevant. Additional content included in the response must be scientific and relevant.

**Level Mark Descriptor:**
0 marks for no awardable content.

**Level 1 (1–2 marks)**
Interpretation and evaluation of the information may be attempted but will be limited with a focus on mainly just one variable.

Limited attempt to link and apply knowledge and understanding of scientific ideas to the given context.

The explanation will contain basic information with some attempt made to link knowledge and understanding to the given context.

The explanation shows some linkages and lines of scientific reasoning with some structure.

**Level 2 (3–4 marks)**
Interpretation and evaluation of the information on both variables and attempts to synthesise and integrate relevant knowledge.

The explanation is occasionally supported through linkage and application of knowledge and understanding of scientific ideas to the given context.

The explanation shows some linkages and lines of scientific reasoning with some structure.

**Level 3 (5–6 marks)**
Interpretation and evaluation of the information and demonstrates throughout the skills of synthesising and integrating relevant knowledge.

The explanation is supported throughout by sustained linkage and application of knowledge and understanding of scientific ideas to the given context.

The explanation shows a well-developed, sustained line of scientific reasoning which is clear and logically structured.

**Indicative content:**
Judgements and conclusions drawn from the graph:
the trend is downwards;
women are less likely to smoke than men;
the trend for men is decreasing more steeply than for women;
the decreasing trend in smoking should lead to a decrease in the occurrence in cardiovascular disease;
the decrease of cardiovascular disease in men would be greater than in women.

**Link between reducing smoking and cardiovascular disease:**
less damage to alveoli so reduced effect on surface area of lungs;
less fatty deposits build up in arteries so less chance of a heart attack or stroke;
effect of nicotine raising heart rate and blood pressure is reduced;
the risk of blood clotting is reduced so lower chance of heart attack or stroke.

**Total 12 marks**

26 (a) (i) 1 mark for the idea that the more alcohol intake the greater the blood alcohol level;
(ii) 1 mark for the idea that smaller people have a greater blood alcohol level than bigger people;
(iii) 1 mark for the idea that females have a greater blood alcohol level than males.

(b) (i) 1 mark for each of the following:
lines both labelled;
one scale covers half the grid and is linear;
axes correct with alcohol consumed per hour as independent variable and blood alcohol level as the dependent variable;
2 marks for points plotted accurately.
(ii) 1 mark for answer in the range 6.2 to 6.6;
(iii) 1 mark for 125.

(c) 3 marks for correctly completing table with cerebellum; cerebrum; and medulla oblongata.

**Total 13 marks**

27 (a) (i) 1 mark for any one from:
cells;
tissues;
(live) animals / named.
(allow mammals)

(ii) 1 mark each for any three from:
to test for:
toxicity / check not poisonous / not harmful;
(interaction with other drugs)
efficacy or to see if they work or check if they treat the disease;
dosage or how much is needed.

(b) argued evaluation: comparison can be written anywhere in evaluation allow use of ‘only’ for implied comparison for each point, e.g. only statins damage muscles / kidneys / organs.
1 mark each for any six from:
statin can damage / muscles / kidneys / organs but cholesterol blockers don’t;
(ignore liver)
(if neither of the first 2 points are given accept for 1 mark):
statins can cause death but cholesterol blockers don’t;
(accept statins are more dangerous than cholesterol blockers or statins have more side effects)
cholesterol blockers can interfere with action of other drugs but statins don’t;
statins are for a life time but cholesterol blockers are not;
statins (might) reduce cholesterol to zero but cholesterol blockers only reduce it or statins reduce cholesterol more;
(allow statins (might) stop membrane / hormone production but cholesterol blockers don’t)

statins better for people with inherited high cholesterol;
cholesterol blockers better for people with dietary cholesterol problems;
taking/using statins/cholesterol blockers is better than dying from heart attack or build up of fat in blood vessels or reduced blood flow.

Total 10 marks

28 (a) 1 mark for each of the following ideas:
emphysema cases increase with an increase in the number of cigarettes smoked per day;
tuberculosis cases are unaffected by the number of cigarettes smoked per day.

(b) 1 mark for each of the following:
cancer; heart disease.

Total 4 marks