B1 Rev Pack 10 Higher markscheme

**M1.**(a)     (i)      **C** and **D**

*no mark if more than one box is ticked*

**1**

(ii)     any **one** from:

*do* ***not*** *allow if other cell parts are given in a list*

•        (have) cell wall(s)

•        (have) vacuole(s)

**1**

(b)     (i)      **A**

*apply list principle*

**1**

(ii)     **D**

*apply list principle*

**1**

(c)     respiration

*apply list principle*

**1**

**[5]**

(d)     (i)      **A** − (cell) wall

**1**

**B** − cytoplasm

**1**

**C** − plasmid

**1**

(ii)     bacterium cell has cell wall / no nucleus / no mitochondria / plasmids present

*accept its DNA / genetic material is not enclosed / it has no nuclear membrane*

*it = bacterium cell*

*accept converse for animal cell*

*ignore flagella*

**1**

(iii)    any **one** from:

•        chloroplast

*ignore chlorophyll*

•        (permanent) vacuole

**1**

(e)     (Long tail) moves the sperm / allows the sperm to swim

**1**

towards the egg

*allow correct reference to other named parts of the female reproductive system*

**1**

(Mitochondria) release energy (for movement / swimming)

*allow supply / produce / provide*

**1**

in respiration

**1**

(f)     real size = 25 / 100 000

**1**

0.00025

**1**

(conversion to) 0.25 (µm)

*allow 0.25 (µm) with no working shown for* ***3*** *marks*

**1**

**[9]**

**M2.**          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]**

**M3.**(a)     **A** − saliva(ry) gland

**1**

**B** − liver

**1**

**C** − duodenum

*ignore small intestine*

**1**

**D** − pancreas

*accept phonetic spellings*

**1**

(b)     (i)      any **three** from:

•        chewing / muscle contraction / mechanical digestion

*allow churning*

•        protease enzymes

*allow pepsin / trypsin*

•        in stomach / small intestine / duodenum / from pancreas

•        (break down protein) into amino acids

*allow (poly)peptides*

**3**

(ii)     neutralises acid pH / makes conditions alkaline

**1**

so lipase can work

**1**

emulsifies fat

**1**

to give large(r) surface area for lipase / enzyme action

**1**

(c)     (i)      starch

*ignore carbohydrate*

**1**

(ii)     breakdown stops

*allow slows down*

**1**

because stomach produces / contains acid / has low pH

**1**

and amylase cannot work in acid / low pH

*accept amylase is denatured / changes shape*

**1**

**[15]**

**M4.**(a)     any **two** from:

•        carbon dioxide / CO2

•        urea

•        protein

•        water / H2O

•        hormones / insulin.

*ignore food / waste / alcohol / drugs / enzymes*

*ignore glucose and oxygen*

*allow* ***two*** *correct hormones for 2 marks*

*allow* ***two*** *correct food components for 2 marks*

*allow antibodies*

*allow antitoxins*

**2**

(b)     (i)      plasma

**1**

platelets

**1**

(ii)     (cardiac) muscle

*allow muscular*

**1**

(c)     Marks awarded for this answer will be determined by the Quality of Written Communication (QWC) as well as the standard of the scientific response. Examiners should also refer to the information in the Marking Guidance and apply a ‘best-fit’ approach to the marking.

**0 marks**No relevant content

**Level 1 (1−2 marks)**There is a description of at least one advantage of the cow tissue valve

**or**

a description of at least one disadvantage of the cow tissue valve.

**Level 2 (3−4 marks)**There is a description of at least one advantage of the cow tissue valve

**and**

at least one disadvantage of the cow tissue valve.

**Level 3 (5−6 marks)**There is a description of the advantages and disadvantages of the cow tissue valve

**or**

a description of several advantages of the cow tissue valve and at least one disadvantage.

**Examples of the points made in the response**

**Advantages of cow tissue valve:**

•        abundant supply of cows

•        so shorter waiting time

*ignore can take many years to find a suitable human donor*

•        no need for tissue typing

•        quicker operation

•        less invasive **or** shorter recovery time

•        cheaper operation costs

•        less operation / anaesthetic risks.

**Disadvantages of cow tissue valve:**

•        made from cow so possible objections on religious grounds

*ignore ethical arguments*

•        new procedure so could be unknown risks

*allow possible transfer of disease from cow*

•        risks of using a stent eg. blood clots, stent breaking or valve tearing

•        not proven as a long term treatment

•        may be rejected

*ignore information copied directly from the table without value added.*

**6**

**[11]**

**M5.**(a)     (i)      any **one** from:

•        (produce) toxins / poisons

•        (cause) damage to cells

*kill / destroy cells*

*allow kills white blood cells*

**1**

(ii)     produce antitoxins

**1**

engulf / ingest / digest pathogens / viruses / bacteria / microorganisms

*accept phagocytosis or description*

*ignore eat / consume / absorb for engulf*

*ignore references to memory cells*

**1**

(b)    (i)      dead / inactive / weakened

*accept idea of antigen / protein*

**1**

(measles) pathogen / virus

*ignore bacteria*

**1**

(ii)     (after infection)

*accept converse if clearly referring to before vaccination*

**1**

rise begins sooner / less lag time

steeper / faster rise (in number)

**1**

longer lasting **or** doesn’t drop so quickly

*idea of staying high for longer*

*ignore reference to higher starting point*

**1**

(iii)    antibodies are specific or needs different antibodies

*accept antigens are different* ***or*** *white blood cells do not recognise virus*

**1**

(c)     reduces spread of infection / less likely to get an epidemic

*accept idea of eradicating measles*

**1**

**[10]**

**M6.**(a)    any **one** from:

*ignore ‘check temperature’*

•        add a water bath

•        heat screen

•        use LED

•        low energy bulb / described

**1**

(b)    (i)      rate / number of bubbles decreases

*accept converse with reference to increasing light* ***or*** *shorter distance*

**or**

less oxygen / gas released

*ignore reference to rate of photosynthesis*

**1**

(ii)     temperature / CO2 (concentration)

*accept ‘it was too cool’* ***or*** *not enough CO2*

*accept number of chloroplasts / amount of chlorophyll*

*allow heat*

*allow CO2*

*do* ***not*** *allow CO2*

**1**

(c)     Marks awarded for this answer will be determined by the Quality of Written Communication (QWC) as well as the standard of the scientific response. Examiners should also refer to the information in the [Marking guidance](file:///C:\Users\AAshwell.THEALBANY\AppData\Local\Microsoft\Windows\Temporary%20Internet%20Files\Content.IE5\resources\AG_BL\menus\Markingguidance.pdf), and apply a ‘best-fit’ approach to the marking.

**0 marks**No relevant content.

**Level 1 (1-2 marks)**There is a brief description of at least 1 tissue **or** at least 1 function of an indicated part of the leaf.

The account lacks clarity or detail.

**Level 2 (3-4 marks)**There is a clear description which includes at least 1 named tissue and at least 1 correct function described for an indicated part of the leaf.

**Level 3 (5-6 marks)**There is a detailed description of most of the structures and their functions.

**Examples of responses:**

•        epidermis

•        cover the plant

•        mesophyll / palisade

•        photosynthesises

•        phloem

•        xylem

•        transport.

**The following points are all acceptable but beyond the scope of the specification:**

•        (waxy) cuticle – reduce water loss

•        epidermis – no chloroplasts so allows light to penetrate

•        stomata / guard cells – allow CO2 in (and O2 out) **or** controls water loss

•        palisade (mesophyll) – many chloroplasts to trap light

– near top of leaf for receiving more light

•        spongy (mesophyll) – air spaces for rapid movement of gases

**6**

**[9]**

**M7.**(a)     66 (beats per minute)

**1**

(b)     heart rate increased

**1**

(c)     4

**1**

(d)     any **two** from:

•        resting heart rate was lower

•        heart rate did not increase as much

•        heart rate did not increase as fast

•        heart rate returned to normal sooner

**2**

(e)     **Level 2 (3–4 marks):**

A detailed and coherent explanation is given, which logically links changes in the body during exercise to reasons for these changes.

**Level 1 (1–2 marks):**

Discrete relevant points made. Links may not be made.

**0 marks:**

No relevant content

**Indicative content**

**Changes:**

•        breathing rate increases

•        deeper breathing

•        (body) temperature increases

•        sweating occurs

•        muscle fatigue

•        vasodilation

**Explanations linked to correct change:**

•        to provide more oxygen

•        to remove carbon dioxide faster

•        (as) more energy required

•        (so) increased respiration

•        (so) more energy transferred

•        for movement or contraction of muscles

•        some energy warms the body

•        (sweating) cools the body down

•        (by) evaporation of sweat

**4**

**[9]**

**M8.**          (a)     (i)      oxygen

*do not credit air*

**1**

(ii)     lung(s)

*do not credit blood* ***or*** *nose or windpipe alone but accept as a neutral answer if included with lungs*

**1**

(b)     oxygen

**1**

lactic acid

*both words required*

**1**

**[4]**

**M9.**          (a)     to transfer / provide / give release energy

***or*** *production of ATP / adenosine triphosphate (molecules)*

*accept to give heat*

**1**

(b)     (i)      C6H12O6 + 6O2 → 6CO2 + 6H2O

*accept any other*

*n  :  6n  :  6n  :  6n  ratio*

*do not credit if any other changes have been made*

**1**

(ii)     glucose

*do not credit sugar / sucrose*

**1**

(c)     (i)      any **two** from

large surface

thin (surface)

moist (surface)

(with a good) blood supply

**2**

(ii)     carbon dioxide

*accept water vapour*

*do not credit just water*

**1**

(d)     (i)      anaerobic (respiration)

**1**

(ii)     any **three** from

in mitochondria

glucose decomposes / breaks down / reacts

***or*** *glucose → lactic acid for (2) marks*

to give lactic acid

***or*** *breathing hard*

***or*** *lactic acid → CO2 + water*

causing pain

(leaving an) oxygen debt

(quick) source of energy

(but) less efficient than aerobic respiration

*accept less efficient than with oxygen*

**3**

**[10]**