M1.(a)   (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

(b)   (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 <u>energy</u> (for movement / swimming)

allow supply / produce / provide

1

   in respiration

1

[9]

M2.(a)   nucleus labelled correctly

1

cell membrane labelled correctly

1

(b)   mitosis

1

(c)   electron (microscope)

1

(d)   higher magnification

1

(e)   45 (mm)

1

45 / 250 **or** 0.18 (mm)
                allow ecf

1

180 (µm)

1

allow 180 (µm) with no working shown for 3 marks

(f)   0.2 µm

1
        [9]

M3.(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]

M4.(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]

M5.(a)   (i)   A = nucleus

1

B = (cell) membrane

1

(ii)   any **two** from:
ignore shape

- no (cell) wall

- no (large / permanent) vacuole
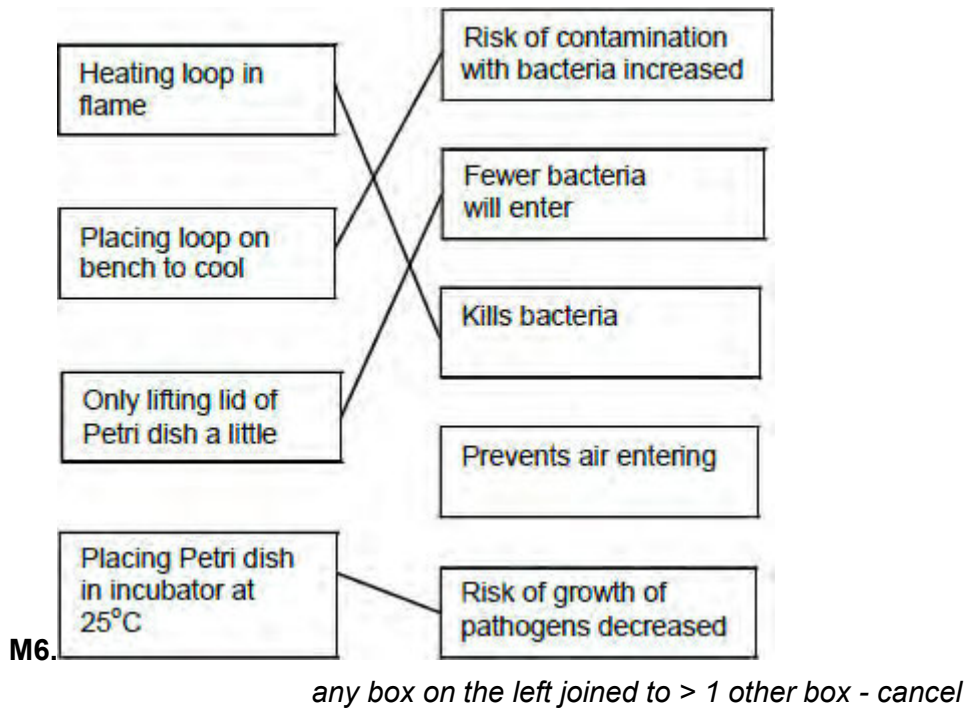
- no chloroplasts / chlorophyll

2

(b)   because high to low oxygen / concentration **or** down gradient
allow 'more / a lot of oxygen molecules <u>outside</u>'
ignore along / across gradient

1

(c)   a tissue

1

[6]

Heating loop in flame	Risk of contamination with bacteria increased
Placing loop on bench to cool	Fewer bacteria will enter
Only lifting lid of Petri dish a little	Kills bacteria
	Prevents air entering
Placing Petri dish in incubator at 25°C	Risk of growth of pathogens decreased

M6.

any box on the left joined to > 1 other box - cancel

[4]

M7.(a) (i) A = (cell) membrane

1

B = cytoplasm
*do **not** accept cytoplast*

1

(ii) To control the activities of the cell

1

(b)

Layer of cells lining the stomach → A tissue

Stomach → An organ

Mouth, stomach, intestines, liver and pancreas → An organ system
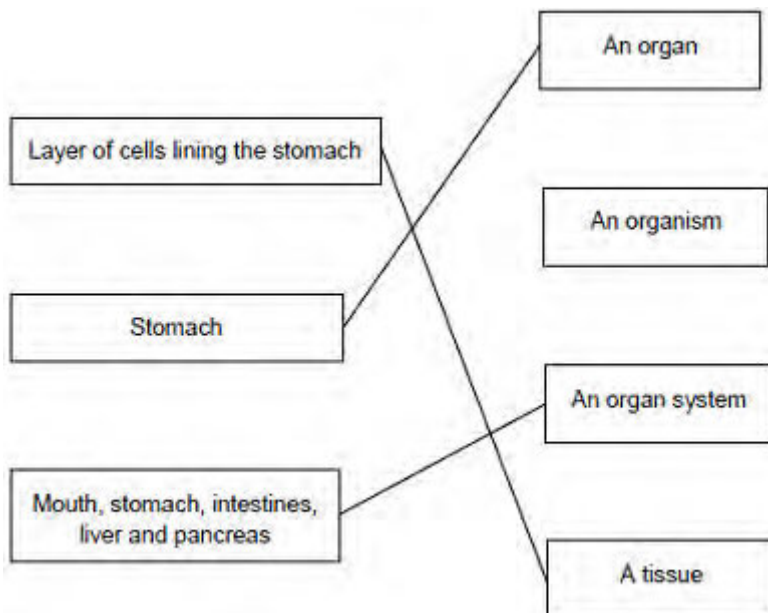
extra lines cancel

3

[6]

M8.(a)   (i)   Chromosomes

1

(ii)   Characteristics

1

(iii)   Classify

1

(b)   Plants
            ignore algae

1

[4]

M9.(a)   A (inoculating / wire) loop

1

        B Petri dish
               allow (agar) plate
               ignore ref to culture medium

1

(b)   (i)   to kill (unwanted) bacteria / microorganisms / microbes
               allow fungi
               ignore viruses / germs

1

    (ii)   Using a flame

1

    (iii) any **one** from:
          •   so bacteria / microorganisms / microbes / pathogens / fungi
             (growing in dish) do not get out
             ignore reference to gases
             ignore viruses / germs

          •   so bacteria / microorganisms / microbes / pathogens / fungi (from
             the air) do not get in.
             ignore viruses / germs

1

(c)   25 °C

1

[6]

M10.(a)   **A** = nucleus

allow phonetic spelling

1

B = (cell) membrane

1

(b)   for repair / growth **or** to replace cells

ignore new cells / skin

1

(c)   (i)   embryos

1

(ii)   paralysis

1

[5]