M1.(a)  (i)  A − (cell) wall
         B − cytoplasm
         C − plasmid

(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

(iii) any one from:
     • chloroplast
       ignore chlorophyll
     • (permanent) vacuole

(b) (Long tail) moves the sperm / allows the sperm to swim
    towards the egg
    allow correct reference to other named parts of the female reproductive system

    (Mitochondria) release energy (for movement / swimming)
    allow supply / produce / provide

    in respiration
M2. (a) nucleus labelled correctly

cell membrane labelled correctly

(b) mitosis

c (c) electron (microscope)

(d) higher magnification

(e) 45 (mm)

45 / 250 or 0.18 (mm)

allow ecf

180 (µm)

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

(f) 0.2 µm

[9]
M3. (a) (i) 25°C

(ii) pathogens

(b) D

more / most bacteria killed
accept biggest area / ring where no bacteria are growing

(c) viruses live inside cells

[5]
M4. (a) (i) C and D

*no mark if more than one box is ticked*

(ii) any one from:

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

- (have) cell wall(s)
- (have) vacuole(s)

(b) (i) A

*apply list principle*

(ii) D

*apply list principle*

(c) respiration

*apply list principle*
M5. (a)  (i)     A = nucleus

B = (cell) membrane

(ii)     any two from:

ignore shape

•   no (cell) wall

•   no (large / permanent) vacuole

•   no chloroplasts / chlorophyll

(b)     because high to low oxygen / concentration or down gradient

allow ‘more / a lot of oxygen molecules outside’
ignore along / across gradient

(c)     a tissue
M6.

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

(i) $A = \text{(cell) membrane}$

$B = \text{cytoplasm}$

*do not accept cytoplasm*

(ii) To control the activities of the cell

(b)

Extra lines cancel
M8. (a)  (i)  Chromosomes

(ii) Characteristics

(iii) Classify

(b) Plants

\textit{ignore algae}
M9. (a) A (inoculating / wire) loop

B Petri dish

allow (agar) plate
ignore ref to culture medium

(b) (i) to kill (unwanted) bacteria / microorganisms / microbes

allow fungi
ignore viruses / germs

(ii) Using a flame

(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

(c) 25 °C
M10. (a)  A = nucleus

allow phonetic spelling

B = (cell) membrane

(b)  for repair / growth or to replace cells

ignore new cells / skin

(c)  (i)  embryos

(ii)  paralysis

[5]