**Additional Unit 2 Biological Molecules Answers**

**M1.**          (a)     glucose; *(reject alpha glucose)*

**1**

(b)     hydrolysis; *(accept catabolic)*

**1**

(c)     (long) straight/unbranched chains;
(idea of more than 1) chains lie side by side / form (micro)fibrils;
idea of H bonds holding chains together;

**3**

**[5]**

 **M2.**          (a)     Cell wall;

Starch (store);

Chloroplast;

**2 max**

(b)     Insoluble;

Reduces/’stops’ water entry/osmosis / does not affect water
potential / is osmotically inactive;

*Accept: description for first point e.g. ‘does not dissolve’.*

**2**

(c)     Light sensitive eyespot / eyespot detects light;

Flagellum enables movement towards light;

Chloroplast/chlorophyll absorbs light/ for photosynthesis;

*Do not penalise references to ‘many chloroplasts’.*

**3**

**[7]**

 **M3.**          (a)     Helical/spiral/coiled;
Compact/description e.g. ‘tightly packed’;

*Feature = one mark
Explanation = one mark*

Insoluble;
Prevents osmosis/uptake of water/does not affect water
potential/(starch) does not leave cell;

*These must be related for both marks but can be in reverse order.*

Large molecule/long chain;
Does not leave cell;

*Allow idea of compact/helical/spiral/coiled due to bonding for two marks.*

**2 max**

(b)     (i)      β/beta Glucose;

***Q*** *Reject alpha glucose*

**1**

(ii)     Glycosidic;

**1**

(c)     Long/straight/unbranched chains (of glucose);

(Joined by) hydrogen bonds;

***Q*** *Ignore reference to alpha glucose*

Form (micro)fibrils/(macro)fibrils;

Provide rigidity/strength/support;

*Allow suitable descriptions for last point e.g. ‘prevents bursting’;*

**3 max**

**[7]**

**M4.**          (a)     (Group of) similar/identical cells/cells with a common origin;

***Q*** *Ignore references to function*

**1**

(b)     (i)      Add iodine/stain specific for starch to the slide/cells/tissue/
/add iodine/stain specific for starch and examine under microscope;

Blue-black/blue/black/purple;

*Reject sample*

**2**

(ii)     Need a single layer of cells/only a few cells thick/not too many
layers;

Light must be able to pass through;

Detail obscured by cells underneath;

**2 max**

(c)     Both are polymers/made of monomers;

Joined by condensation/molecules can be broken down by hydrolysis;

Both have 1-4 links;

Contain C(arbon), H(ydrogen) and O(xygen)/both made up of glucose;

Both insoluble;

Both contain glycosidic bonds;

*Accept other valid answers.
Ignore ref to unbranched.*

**2 max**

**[7]**

 **M5.**          (a)     Differentiation/specialisation

**1**

(b)     (i)      (cellulose) Cell wall;

**1**

(ii)     Two marks for correct answer 2350–2500;;

*Accept measured and real lengths in different units for one mark.*

         One mark for a measured length divided by real length;

**2**

(iii)     Chloroplasts absorb light;

***Q*** *Do not accept chlorophyll as alternative to chloroplasts*

         Large vacuole pushes chloroplasts to edge (of cell);

         Thin/permeable (cell) wall to absorb carbon dioxide;

**1 max**

**[5]**

**M6.**          (a)     A – granum/thylakoid;
chlorophyll molecules to trap light / light absorbing pigments/
light dependent reaction / part of light dependent reaction;

**2**

B – stroma;
(contains enzymes for) carbon dioxide fixation/light-independent reaction/
part of light-independent reaction;
*(allow ribosome role of protein in photosynthesis)*

**2**

(b)     (i)      C – starch;

**1**

(ii)     from glucose in a condensation/polymerisation reaction / many
glucose molecules joined together;

**1**

**[6]**