M1. (a) 1. Dissolve in alcohol, then add water;  
2. White emulsion shows presence of lipid. 

(b) Glycerol. 

(c) Ester. 

(d) Y (no mark)  
Contains double bond between (adjacent) carbon atoms in hydrocarbon chain. 

(e) 1. Divide mass of each lipid by total mass of all lipids (in that type of cell);  
2. Multiply answer by 100. 

(f) Red blood cells free in blood / not supported by other cells so cholesterol helps to maintain shape;  
Allow converse for cell from ileum – cell supported by others in endothelium so cholesterol has less effect on maintaining shape. 

(g) 1. Cell unable to change shape;  
2. (Because) cell has a cell wall;  
3. (Wall is) rigid / made of peptidoglycan / murein. 

M2. (a) 1. Starch formed from α-glucose but cellulose formed from β-glucose;
2. Position of hydrogen and hydroxyl groups on carbon atom 1 inverted.

(b) 1. Insoluble;  
2. Don't affect water potential;  
\textit{OR}  
3. Helical;  
\textit{Accept form spirals}  
4. Compact;  
\textit{OR}  
5. Large molecule;  
6. Cannot leave cell.

(c) 1. Long and straight chains;  
2. Become linked together by many hydrogen bonds to form fibrils;  
3. Provide strength (to cell wall).

M3.(a) 1. Helicase;  
2. Breaks hydrogen bonds;  
3. Only one DNA strand acts as template;  
4. RNA nucleotides attracted to exposed bases;  
5. (Attraction) according to base pairing rule;  
6. RNA polymerase joins (RNA) nucleotides together;  
7. Pre-mRNA spliced to remove introns.

(b) 1. Polymer of amino acids;  
2. Joined by peptide bonds;  
3. Formed by condensation;  
4. Primary structure is order of amino acids;  
5. Secondary structure is folding of polypeptide chain due to hydrogen bonding;  
\textit{Accept alpha helix / pleated sheet}  
6. Tertiary structure is 3-D folding due to hydrogen bonding \textbf{and} ionic / disulfide bonds;  
7. Quaternary structure is two or more polypeptide chains.
(c) 1. Hydrolysis of peptide bonds;
  2. Endopeptidases break polypeptides into smaller peptide chains;
  3. Exopeptidases remove terminal amino acids;
  4. Dipeptidases hydrolyse / break down dipeptides into amino acids.

M4.(a) 1. Maltose;
  2. Salivary amylase breaks down starch.

(b) Maltase.

(c) (Mimics / reproduces) effect of stomach.

(d) 1. Add boiled saliva;
  2. Everything same as experiment but salivary amylase denatured.

(e) 1. Some starch already digested when chewing / in mouth;
  2. Faster digestion of chewed starch;
  3. Same amount of digestion without chewing at end.
    
    Accept use of values from graph

M5.(a) 1. A: phospholipid (layer);
    1. Reject hydrophobic / hydrophilic phospholipid
    
    2. B: pore / channel / pump / carrier / transmembrane / intrinsic / transport protein;
    2. Ignore unqualified reference to protein
(b) (i) Condensation (reaction);

(ii) Organelle named; Function in protein production / secretion;

*Function must be for organelle named*

*Incorrect organelle = 0*

eg

1. Golgi (apparatus);
   1. Accept smooth endoplasmic reticulum

2. Package / process proteins;

*OR*

3. Rough endoplasmic reticulum / ribosomes;
   3. Accept alternative correct functions of rough endoplasmic reticulum. ER / RER is insufficient
   3. Accept folding polypeptide / protein

4. Make polypeptide / protein / forming peptide bonds;

*OR*

5. Mitochondria;

6. Release of energy / make ATP;
   6. Reject produce / make energy
   6. Accept produce energy in the form of ATP

*OR*

7. Vesicles;

8. Secretion / transport of protein;