

**Revision exercise 1**  
**FORM 4 PAPER 2 MARKING SCHEME**

**Question 1**

(a)

1: cytoplasm

2: large central vacuole/ sap vacuole/ tonoplast

3: cell wall

4: cell membrane/cell surface membrane

(b) tonoplast and cell membrane

(c) smaller size

cell membrane and cytoplasm detached from the cell wall

the shape **must** remain the same

correct labels

**Question 2**

(a) water

mineral salts/minerals

(b) large surface area to volume ration

faster absorption/more absorption

**Question 3**

(a)

D: glycerol

E: fatty acids

F: maltose/double sugar/disaccharide

(b) amylase/diastase

(c) Enzyme specific to substrate

active site has special/specific/unique shape/conformation

only the substrate having the corresponding shape can bind/ not all substance can bind if shape different

- (d) (i) strong heat / ref. high temperature AW  
denatures / destroys / damages + enzymes  
would not tenderise the meat AW / gives enzyme time to work AW
- (ii) protease or lipase ;  
acts on / digests / breaks down proteins for protease ;  
**or** acts on / digests / breaks down fats/lipids for lipase  
changing them to peptides / peptones / proteoses / polypeptides for  
protease etc. ;  
**or** smaller or simpler molecules/glycerol **and** fatty acids for lipase  
bonds broken / easier to chew AW

#### Question 4

- (a) Benedict's solution

Very hot/boiling water bath

- (b) Tube 2; tube 3

Reducing sugar diffuses through membrane for tube 2;  
Starch digested into maltose/reducing sugar;  
maltose/reducing sugar diffuses out;

- (c) G oesophagus/gullet ;

H stomach ;

I colon/large intestine/large bowel

- (d) E/ ileum/ small intestines

- (e) H/stomach

F/duodenum/small intestines

#### Question 5

- (a) protein + for growth / repair / production of protoplasm or  
antibodies or enzymes or hormones;  
carbohydrates (ignore names) + for energy;  
fats + for energy / insulation / solvent (e.g. for some vitamins);  
named mineral / ion + function\*;  
named vitamin + function\*;

fibre / roughage + effective digestive transit;  
water + solvent / other correct use

\*Do not attribute the mark if the function is not correct

b) (i) diet low in saturated fats and carbohydrate;

Obesity: increase in body weight;  
increase in fat storage due to high intake of fats and carbohydrate (starch  
or any named)

(ii)(heart patient) reduced fat;  
animal/saturated (fat);  
deposition on / in artery / atheroma / atherosclerosis;  
of heart / coronary;  
increased blood pressure;

### **Question 6**

(a) (i)

requires energy ;  
from respiration  
movement of ions/molecules /substances / particles ;  
(through) living/cell membrane ;  
against concentration gradient /described ;  
correct example, e.g. mineral ions and root hair cells/glucose and ileum

(ii)

water ;  
down (water) concentration / water potential gradient ;  
partially permeable membrane ;  
by diffusion ;  
passive / energy not required

(b)

water uptake ;  
ref. water potential higher outside of cell/ref. concentration gradient ;  
increase in volume/cell swells ;  
membrane cannot withstand pressure ;  
cell bursts ;