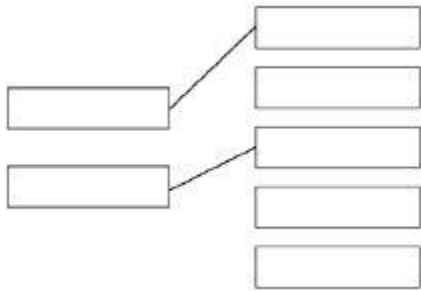


## Q1.

(a)



*additional line from a level of organisation  
negates the mark for that level of organisation*

2

(b) palisade mesophyll

1

(c)  $\frac{50}{8}$ 

1

6 / 6.25 / 6.3 (micrometres)

1

*an answer of 6 / 6.25 / 6.3 scores 2 marks*

(d) they have no chloroplasts / chlorophyll

*allow they are underground*

*allow they don't get (access to) light*

*allow (because) photosynthesis needs light*

*allow they can't absorb light*

*ignore 'sun'*

*ignore 'it is dark'*

1

(e) differentiation

1

(f) to protect endangered plants from extinction

1

(g) plants can be produced quickly

1

(h) any **one** from:

- glucose / sugars / starch
- amino acids / protein
- hormones

*allow named hormones e.g. auxin*

- ions / minerals

*allow magnesium / nitrate*

- vitamins

*allow named vitamins e.g. vitamin B*

- water



allow H<sub>2</sub>O / H<sub>2</sub>O

ignore oxygen / carbon dioxide / agar / nutrients / fertiliser

1

[10]

## Q2.

(a) any **two** from:

*allow proteins / hormones / antibodies / vitamins / minerals / ions / fatty acids / glycerol*

- carbon dioxide
- water
- glucose
- amino acids

*ignore sugar / enzymes / nutrients / waste*

- lactic acid

2

(b) more haemoglobin

**max 2 marks if 'more' is not given**

1

(therefore) more oxygen can be carried / transported

1

(for) more (aerobic) respiration of muscle (cells)

**or**

more energy released for muscle (cells)

*allow less anaerobic respiration / lactic acid / oxygen debt / fatigue in muscle (cells)  
i.e. addition of 'debt'*

*do **not** accept energy produced*

1

(c) pulmonary artery

1

vena cava

1

(d) B

1

(e) any **three** from:

- arteries have a **thicker** layer of muscle (tissue) **or** veins have a **thinner** layer of muscle (tissue)\*
- arteries have a **thicker** layer of elastic tissue **or** veins have a **thinner** layer of elastic tissue\*

*\*if neither marking points 1 or 2 awarded, allow arteries have a thick wall **and** veins have a thin wall*

**or**

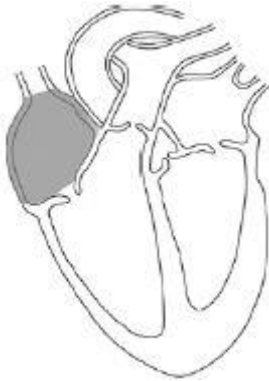
*arteries have a **thicker** wall or veins have a **thinner** wall for 1 mark*

do **not** accept 'cell wall'

- arteries have a narrower lumen **or** veins have a wider lumen  
*allow descriptions of 'lumen'*
- arteries do not have valves **and** veins have valves  
*allow **only** veins have valves*

3

- (f) allow an X drawn anywhere in grey shaded area below:



*if a large X is drawn, award the mark if the intersection touches the grey area*  
*if a label line is used, award marks if the end of the label line touches the grey area*  
*allow label 'pacemaker'*  
*ignore label 'right atrium'*

1

- (g) an irregular heart beat  
*allow arrhythmia*  
*allow fibrillation*  
*ignore heart failure*  
*do **not** accept cardiovascular disease / heart murmur*

1

[13]

### Q3.

- (a) (A) bronchus  
*allow bronchi*  
*allow bronchiole*

1

- (B) trachea  
*allow windpipe*

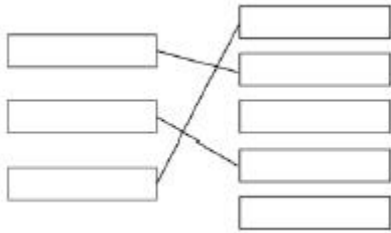
1

- (C) alveolus  
*allow alveoli*  
*ignore air sac*

1



- (b) circulatory system 1
- (c) **Q** 1
- (d) guard cell 1
- (e) a group of cells with a similar structure / function 1



- (f)   
*1 mark for each correct line*  
*extra line from a tissue negates the mark for that tissue* 3
- [10]**

**Q4.**

- (a) tissue → organ → organ system  
*one right for 1 mark*  
*three right for 2 marks* 2
- (b) **Epithelial tissue** → covers the outside and the inside of the stomach  
*more than one line from a tissue = no mark* 1
- Glandular tissue** → produces digestive juices 1
- Muscular tissue** → allows food to be churned around the stomach 1
- (c) (i) light  
*ignore dark* 1
- (ii) moving (to the dark) 1
- (iii) any **two** from:
  - use more woodlice
  - repeat the experiment
  - run for a longer time2

**[9]**

**Q5.**

(a)

Structure	Organ	Organ system	Tissue
Stomach	✓		
Cells lining the stomach			✓
Mouth, oesophagus, stomach, liver, pancreas, small and large intestine		✓	

all 3 correct = 2 marks  
 2 correct = 1 mark  
 1 or 0 correct = 0 marks

2

(b) (i) diffusion  
*allow phonetic spelling*

1

(ii) glucose

1

(iii) mitochondria

1

**[5]****Q6.**

(a) (i) xylem

1

(ii) water

1

minerals / ions / named example(s)

*ignore nutrients*

1

(b) (i) movement of (dissolved) sugar  
*allow additional substances, eg amino acids / correct named sugar (allow sucrose / glucose)*  
*allow nutrients / substances / food molecules if sufficiently qualified*  
*ignore food alone*

1

(ii) sugars are made in the leaves

1

so they need to be moved to other parts of the plant for respiration /



growth / storage

1

(c) (i) mitochondria

1

(ii) for movement of minerals / ions  
*Do not accept 'water'*

1

against their concentration gradient

1

[9]

**Q7.**

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

1

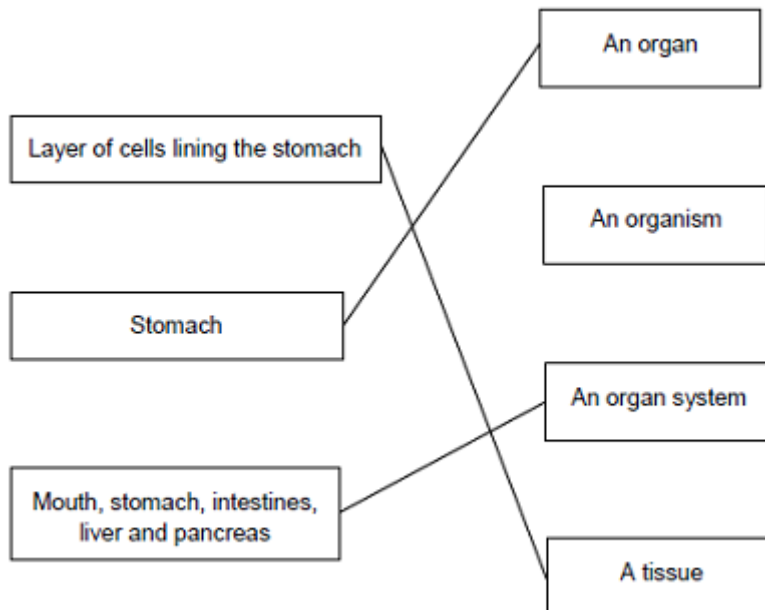
B = cytoplasm  
*do not accept cytoplasm*

1

(ii) To control the activities of the cell

1

(b)



*extra lines cancel*

3

[6]