8. Transport in plants

8.4 Translocation

Paper 4

Marking Scheme

Q1.

(b)(i)	252 ;	**1**	
(b)(ii)	*any three from:* **1** (carbon dioxide / ^{14}C) enters (leaf), through stoma(ta) / by diffusion ; **2** ref to photosynthesis ; **3** is used to make, glucose / (simple) sugar ; **4** *idea of* photosynthesis is catalysed by enzyme(s) ; **5** reaction(s) occur in chloroplasts ; **6** glucose / (simple) sugars, converted to sucrose ;	**3**	

(c)(i)	*any two from:* buds / root (tips) / tubers / storage organs / flowers / fruits / seeds / young *or* growing leaves / shoot (tips) / nectaries ;;	**2**	**A** any parts of a flower
(c)(ii)	*any three from:* **1** sucrose is converted to glucose ; **2** (sucrose / glucose / sugars) respired / provide energy ; **3** *any plant process that requires energy* e.g. growth / reproduction / flowering / active transport / absorption of ions / cell division / mitosis / metabolism / fruit formation ; **4** stored as, sucrose / starch ; **5** used to make cellulose (for cell walls) ; **6** converted to amino acids (used to make proteins) ; **7** AVP ; e.g. used to make nectar	**3**	**A** converted to starch

Q2.

(a)(i)	*one mark per correct row* ;;;;;	**5**
(a)(ii)	**B / D / F ;**	**1**
(a)(iii)	translocation ;	**1**
(a)(iv)	**H ;**	**1**

function	name of structure	letter from Fig. 6.1
provides support to the stem	xylem	**L**
protects flower bud	sepal	**G**
produces glucose	leaf	**H**
produces pollen	anther	**B**
delivers male nuclei to the site of fertilisation	pollen tube	**D**

Q3.

(b)	correct position labelled on the leaf ; correct position labelled on the stem ; correct position labelled on the root ;	**3**	
(c)(i)	higher concentration in the stem / aphid **D** is nearer the root / is before the branching of the plant ; (sucrose moves by) translocation ; sucrose moves up the plant ; root / tuber, is a source ; (leaves / stems / AW) are a sink ; no photosynthesis (in the dark) ; no / less, glucose/sucrose (made in the leaves) ; plant uses stored starch (from root) / AW ;	**3**	

Q4.

(c)	**Q** sucrose / ^{13}C, is in shoot and root ; **T** no, sucrose / ^{13}C, in shoot or root ; **R** sucrose / ^{13}C, in root only / (in root but) not in shoot ; **S** sucrose / ^{13}C, in shoot only / (in shoot but) not in root ; *idea that* no transport of, sucrose / ^{13}C, where phloem is removed ; phloem transports (sucrose) in both directions ; leaf is source / carbon (dioxide) is fixed in leaf / sucrose is made in leaf ; roots / shoots, are sink(s) / described ; e.g. of descriptions respired / stored as starch / converted to another (named) compound ; AVP ; e.g. **Q** is a control	**5**	

Q5.

(a)(i)	sucrose / sugar ; amino acids ;	**2**	
(a)(ii)	translocation ; (phloem) allows bidirectional movement / AW ; movement (of food / sap) from source to sink ; sucrose / amino acids / food, are produced / taken from storage, at a source ; region of respiration / storage / growth, is a sink ; named example of a, source / sink (in the correct context) ; some organs can be both a source or a sink at different times ;	**4**	