Question number	Answer	Notes	Marks
1 (a)	1. water; 2. dilute solution to concentrated solution / high conc. (of water) to low conc. (of water) / eq; 3. <u>selectively</u> permeable membrane / eq;	 allow partially / semi / differentially	 3
(b) (i)	S scale linear and half grid for both axes; L line straight and through points; A1 axes correct way; A2 axes labelled concentration in mol/dm^3 and volume in cm^3; P all points plotted accurately;	lose S if axes for volume is not truncated max 3 for bar chart	 5
(ii)	0.28 / read from graph;		 1
(iii)	3, 4, 5 and 6 ticked;		 1

Question number	Answer	Notes	Marks
(c) (i)	<u>concentration of glucose</u>;		1
(ii)	volume of solution / mass/shape/size/surface area of chip / variety of potato / temperature / time / eq;		1
(iii)	1. water left on chip; 2. water left in cup / water spilled; 3. evaporation from cup; 4. parallax error / used imprecise measuring scale;	ignore human error	2
(iv)	measuring cylinder / burette / syringe / pipette;	allow measuring jug	1

(Total for Question = 15 marks)

Question number	Answer	Notes	Marks
2 (a)	movement of particles / ions / molecules / gas / eq; high to low concentration / down gradient / eq;	allow ammonia ignore substance ignore along gradient	2
(b)	S scale linear and half grid; L lines straight and through points; A axes correct way around; P points plotted correctly; U units: s / seconds and cm; K key to note 1 and 3 (drops);	ignore extrapolation one line only loses L and P and K allow start at origin if start at 4 and not 0 if bar graph 4 max (lose S and L)	6
(c)	faster/quicker (colour change/movement/diffusion /spread); (with) high conc. / 3 drops;	Allow converse	2
(d)	1.176 / 1.18;;	allow one mark for 20 over 17 ignore 1.2 ignore 1.17	2
(e)	(3 drops) more concentrated/more ammonia/more particles/greater concentration gradient/greater diffusion gradient / eq;	allow converse	1
(f)	use one conc. / same number of drops / eq; different temperatures / method to obtain different temperatures described /eq;	set up the (same) experiment at different temps = 1 mark	2
		Total	15

Question number	Answer	Notes	Marks
3 (a) (i)	correctly labelled;	ignore other labels if label line goes to wall and membrane = 0	1
(ii)	cell wall; chloroplast; vacuole;	ignore chlorophyll	3
(b) (i)	LHS / water level lower than RHS / sucrose level;	labelling not required	1
(ii)	osmosis;	ignore diffusion	1
		Total	6

<table>
<tr><th>Question number</th><th>Answer</th><th>Notes</th><th>Marks</th></tr>
<tr><td>4 (a) (i)</td><td>
<table>
<tr><th>Structure</th><th>Organ</th></tr>
<tr><td>Spongy mesophyll</td><td>leaf</td></tr>
<tr><td>Alveolus</td><td>lung(s);</td></tr>
<tr><td>Nephron</td><td>kidney(s);</td></tr>
<tr><td>Villus</td><td><u>small</u> intestine / duodenum / ileum;</td></tr>
</table>
</td><td></td><td>3</td></tr>
<tr><td>(b) (</td><td>ment of molecules/particles/gases/named molecule;

high conc. to low conc. / down concentration gradient / eq;

passive / eq;</td><td>ignore <u>substances</u>

allow along concentration gradient</td><td>Max 2</td></tr>
<tr><td>(c)</td><td>ultrafiltration / pressure;
glomerulus / Bowman’s capsule / renal capsule;</td><td>ignore filtered alone</td><td>2</td></tr>
</table>

Total 7 marks