Question number	Answer	Notes	Marks
1 (a)	carbohydrate, protein, lipid/fat, vitamins, minerals, correct proportion / correct amount / suitable amount / adequate amount / eq;	all 5 named ignore water and fibre (all components) in correct proportion / amount =1 eg correct amount of protein = 1	2
(b)	1 low calories / low energy / no carbohydrate / low carbohydrate / eq; 2 not enough (quality) protein; 3 not enough fat/lipid; 4 not enough vitamin / lack named vitamin / only vitamin C; 5 not enough mineral / lack named mineral / only iron; 6 flavours may be E numbers / may not want additives / eq;		max 2
		Total	4

Question number	Answer	Notes	Marks
2 (a)	less carbon dioxide (in tube) / carbon dioxide absorbed / eq; photosynthesis; light;	ignore oxygen	3
(b)	control / show leaf causes change / (valid) comparison / show indicator does not change colour on its own / eq;	nothing happens without a leaf = 1 to show light does not cause the change = 1	1
(c)	1 respiration and photosynthesis; 2 <u>rate of</u> (photosynthesis) = <u>rate of</u> (respiration); 3 less photosynthesis in dim light / eq; 4 carbon dioxide level is constant / no net input of carbon dioxide / no net output of carbon dioxide / eq;	rate of photosynthesis is the same as rate of respiration = 2	max 2
(d) (i)	distance / wattage / any valid method to change LI / more lamps / eq;	no credit for change intensity of light	1
(ii)	count bubbles; measure volume using syringe / measure volume using measuring cylinder / collect gas using syringe / collect gas using measuring cylinder / eq; time taken for indicator to change colour;	ignore names of gases	max 1
(iii)	repeats / average ; similar pattern / eq; not include anomalies / remove anomalies / eq;		max 2
		Total	10

Question number	Answer	Notes	Marks
3 (a)	sun/light makes vitamin D;		1
(b)	children still growing (bones) / developing (bones) / eq;	allow converse - adult bones fully developed ignore ref to cod liver oil / time spent indoors	1
(c)	fat / lipid; carbohydrate; protein; fibre / roughage; water; minerals / salts / ions;	only accept generic names, so iron = 0, glucose = 0 if list ignore non generic names	Max 3
(d)	idea of high in sugar / fat / carbohydrate / energy / calories 2. not use / not burnt / not needed / eq;	marks are for idea of energy balance and not consequence	2
(e)	1. o sity / overweight / joint damage; 2. di etes; 3. heart sease / heart attack / angina / cardiac arrest / eq; 4. blo s/narrows/build up arteries / blocks blood vessels / high blood pressure; 5. strok	 ignore vein / capillary	Max 2

(f)	1. weigh risp / mass of crisp; 2. burn cris / eq; 3. burnt completely / e 4. heat wat / hold (burning crisp) under tube / hold (burning crisp) under water / calorimeter / eq; 5. vo me of water / mass of water; 6. m sure temperature before and after / temperature rise / temperature increase / change in temperature / eq;	allow marks if clear in formula allow heat water if implicit	Max 4

Total 13 marks

<table>
<tr><th>Question number</th><th>Answer</th><th>Marks</th></tr>
<tr><td>4 (a)</td><td>
<table>
<tr><th>component of blood</th><th>function</th><th>cell type</th></tr>
<tr><td>platelet</td><td>clotting / clot; ignore scab / net / mesh / plug / eq</td><td>cell fragment</td></tr>
<tr><td>phagocyte</td><td>engulf / ingest / destroy / kill / eq;</td><td>white</td></tr>
<tr><td>lymphocyte</td><td>antibody / antitoxin / immune response / immunity;</td><td>white;</td></tr>
</table>
</td><td>4</td></tr>
<tr><td>(b)</td><td>less/no clotting / fibrin;
blood loss / eq;
entry of microorganisms / infection / eq;
ignore disease</td><td>Max 2</td></tr>
<tr><td>(c)</td><td>antibody;
faster/sooner antibody production / <u>faster</u> response to infection / eq;
more (antibody) / eq;</td><td>Max 2</td></tr>
</table>

Total 8 Marks

Question number	Answer	Notes	Marks
5(a)	1. protects fetus; 2. cushions / shock absorber / supports / eq;		2
(b)(i)	1. oxygen; 2. glucose; 3. amino acids; 4. vitamins / named vitamins; 5. minerals / named mineral / ions / salts; 6. antibodies; 7 water;	Mineral ions and proteins on same line = 0 Minerals and proteins on different lines = 1 Mp 5 ignore nutrients / food	2 max
(ii)	1. carbon dioxide; 2. urea;	Mp 2 ignore urine	2
(c)	1. villi; 2. large surface area; 3. blood supply / capillaries; 4. concentration gradient; 5. short distance / thin walled / eq;	blood vessels close to each other get Mp 3 and Mp 5	3 max

Total 9 marks

Question number	Answer	Notes	Marks
6 (a)	species from different area / another country / foreign / non-native / new / moves in / eq; compete / replace / take over / win / spreads / affect survival / threatens wildlife / eq;	ignore invades / attacks / unwanted / cause harm	2
(b)	66.1% / 66.08 / 66.079 / 66.0786 / 66.07865 / 66.078648;	allow one mark for 1,798 <u>and</u> 2,721 in working	2
(c)	lacks predators / eq; rhizomes / underground stems need to be killed / rhizomes / underground stems hard to remove / eq;	ignore large network of underground stems ignore reference to climate	max 1
(d)	1 competition for light / blocks light; 2 (less) photosynthesis; 3 no bare soil / no space to grow; 4 (less) germination / eq; 5 competition for water / minerals / nutrients;		max 2
(e)	named pest / aphid / eq; named predator / ladybird / eq;	allow snake eat frogs / eq not just any predator prey relationship eg not birds eating worms no credit if organism chosen is not a pest	2

Question number	Answer	Notes	Marks
6 (f) (i)	phloem;	allow phonetic spelling	1
(ii)	(less) sucrose / carbohydrate / sugar / amino acids; (less) respiration / (less) energy / (less) protein;	ignore nutrients / minerals / glucose	2
(g)	(no) food chain effect / (no) harm to native species / (no) harm to other plants / other plants not eaten / affect other species / eq;		1
		Total	13