

| Question number | Answer | Notes | Marks |
|-----------------|--|---|----------|
| 1 (a) | 1 (feed on) dead / rotting / decomposing / eq; 2 enzyme(s); 3 extracellular / outside / external / eq; 4 <u>digests / digestion / digestive</u> ; 5 absorption / eq; | | max 2 |
| (b) (i) | D; | | 1 |
| (ii) | B; | | 1 |
| (c) (i) | chlorophyll; | ignore chloroplasts | 1 |
| (ii) | <u>carbon dioxide</u> + <u>water</u> ; <u>glucose</u> + <u>oxygen</u> ; | ignore light / ignore chlorophyll ignore energy allow if correct symbols and correct formulae ignore balancing | 2 |
| | | Total | 7 |

| Question number | Answer | Notes | Marks |
|-----------------|---|--------------------------------|----------|
| 2 (a) | evaporation / loss of water / diffusion; surface of plant / stomata / from leaves / from plant / eq; | | 2 |
| (b) | stop water loss (from soil) / stop evaporation (from soil) / water can only be lost through plant / eq; | ignore prevent water into soil | 1 |
| (c) | <u>kinetic</u> energy; molecules move faster / eq; stomata; open in light / close in dark; diffusion / evaporation / transpiration; | ignore guard cells | 4 |
| | | Total | 7 |

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|-----------------|--|--------------|-------|
| 3 | C different calcium / range of calcium / eq; O same age / strain / species / gender / eq; R several rats / different groups / eq; M1 mass / eq; M2 one day plus / eq; S1 + S2 same mass food / type of food / diet / water / same cage / temperature / eq; | | 6 |
| | | Total | 6 |

| Question number | Answer | Notes | Marks |
|-----------------|---|--|-------|
| 4 (a) | stomata / guard cells; <u>spongy</u> (mesophyll) / <u>spongy</u> (layer) / air spaces / eq; moist; thin; large surface area; | ignore wide and flat | Max 3 |
| (b) | $6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$; $\text{CO}_2 + \text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + \text{O}_2 = 1$ | allow one mark for correct equation and correct formula and a second mark for correct balance formula wrong = 0 eg. $\text{CO}_2 = \text{wrong}$ but $\text{CO}_2 = \text{correct}$ reject word equation ignore light/chlorophyll/energy | 2 |
| (c) (i) | dark for 12 hours plus; | | 1 |
| (ii) | keep in dark / no light / cover leaf surface / eq; | | 1 |
| (iii) | boil/heat/warm in ethanol/alcohol; safety: water bath / no flame / eq; iodine; blue black / eq; | tube of ethanol in water bath = 2 ignore tongs / gloves etc allow black / dark black / dark blue / blue | 3 |

Total 10 marks

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|-----------------|--|-----------------------------|-------|
| 5 (a) (i) | A; (C) B; A; | Only one letter in each box | 3 |
| (ii) | 1. (le) <u>emulsification</u> / <u>emulsifies</u> ; 2. small(er) d ps / increased surface area / more drops; 3. optimum pH / correct pH / best pH; 4. ipase) is an enzyme; 5. d estion / breakdown; 6. i o <u>fatty acids</u> / into <u>glycerol</u> ; | | 4 |
| (b)(i) | villus / villi; | allow phonetic spelling | 1 |

| | | | |
|------|--|--|---|
| (ii) | <ol style="list-style-type: none"> 1. large surface area; 2. microvilli ; 3. capillaries; 4. movement of blood / concentration gradient / eq; 5. one cell thick / thin wall / thin / short distance; 6. diffusion; 7. active transport; | <ol style="list-style-type: none"> 1. ignore many villi idea 4. ignore cell wall | 5 |
|------|--|--|---|

Total 13 marks

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|-----------------|--|---|-----------|
| 6 (a) | (trap/absorb) light / eq; chlorophyll; photosynthesis / starch / glucose / eq; | ignore trap energy | 2 |
| (b) | A cell wall; B vacuole; C cytoplasm; | | 3 |
| (c) (i) | C; A; | | 2 |
| (ii) | starch removed / starch used / no starch / eq; (converted to) glucose; respiration / energy; | | 2 |
| (iii) | boil (in ethanol) / heat (in ethanol)/ eq; ethanol / alcohol; no naked flame / water bath / hot water / in water / eq; | allow water mark if linked to boil / heat | 3 |
| (iv) | iodine / iodide; | | 1 |
| | | Total | 13 |