Question number	Answer	Notes	Marks
1 (a)	$6CO_2 + 6H_2O \longrightarrow C_6H_{12}O_6 + 6O_2$;;	unbalanced but correct =1 eg $CO_2 + H_2O \longrightarrow C_6H_{12}O_6 + O_2$; words alone = 0	2
(b) (i)	1. tu off Bunsen / use water bath / eq; 2. eth ol is flammable / eq; OR 3. wear ggles; 4. p tect eye; OR 5. use forcep / tongs; 6. protect fingers / skin;	ignore gloves / protective clothing	2
(ii)	kill leaf / stop digestion / stop chemical reactions; denature enzymes;	ignore wax removal / soften leaf	1
(iii)	1. remove chlorophyll / remove green (pigment) / remove colour / to see colour of iodine; 2. a ow remove waxy cuticle;	ignore remove chloroplasts / destroy chlorophyll	1

(c)(i)	1. p ce one leaf in light / no cover of leaf; 2. p ce one leaf in dark / cover part of leaf;	2. use of stencil / tape	2
(ii)	1. u variegated leaf / eq; 2. dr pattern of chlorophyll and compare results / test white and green parts / eq;		2
(iii)	1. NaOH / soda lime / KOH; 2. sorb / remove carbon dioxide / eq;		2

Total 12 marks

Question number	Answer	Notes	Marks
2	large surface area; thin (leaf); upper epidermis / cuticle; transparent / lets light through; chloroplasts / chlorophyll; palisade (mesophyll); close to surface; absorb light; spongy (mesophyll); diffusion; stomata / guard cells; carbon dioxide; xylem; water; ignore if transpired	mark points independently allow carbon dioxide and water if given in an equation	max 6

TOTAL 6 MARKS

Question number	Answer	Notes	Marks
3 (a) (i)	named ion; eg. nitrate / magnesium / phosphate / sulphate / iron / potassium / calcium use of ion;	eg. nitrate for amino acids / protein / nucleic acid / eq allow Mg and chloroplast allow symbols ignore nitrogen / copper	2
(b) (i)	S – scale linear and half grid in one direction; L – line straight and through points; A1 – axes correct way round; A2 – axes labelled (days and number/leaves); P – points plotted accurately; K – key;	if leaves plot as zero for day 0 lose P but allow L if leaves plot as 10 for day 0 allow P and L	6
(ii)	light; temperature; carbon dioxide; pH; humidity; ignore water wind;	ignore ref to plant	max 3

TOTAL 11 MARKS

Question number	Answer	Notes	Marks
4 (a)	$6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$;; $CO_2 + H_2O \rightarrow C_6H_{12}O_6 + O_2$ = 1	correct formula equation for photosynthesis = 1 if this formula equation is correctly balanced = 2 accept CO2 reject CO^2 word equation = 0 respiration = 0	2

(b) (i)	Two from: 1. mperature 2. light (intensit 3. carbon dioxide / CO_2;; Then: 4. indication of level of abiotic factor during the day; 5. stated effect on rate of photosynthesis;		Max 4
(ii)	1. ss <u>photosynthesis</u>; 2. (more) transpiration / evaporation / loss of water / eq; 3. wilti / loss of turgor / stomata close / less mineral ion transport; 4. less carbon dioxide uptake; 5. enzymes denature / change in shape of active site / eq;	1. gnore less respiration 4. gnore gas exchange	Max 4

Question number	Answer	Notes	Marks
5(a)	1. scale linear for numbers on y axis and uses half grid; 2. x axi labelled year(s) or 1969-73; 3. y axi labelled number of heart attacks; 4. units as per 100 000; 5. plotted correctly; 6. y for men and women;	Line graph lose 1 for plotting Allow Mps 1, 2 and 3 if plotted horizontally	6
(b)	men higher / women lower / eq; men decreased / little change in women / women increased in recent years / women fluctuate / eq;		2
(c)	less smoking / less fat in diet / less alcohol / less salt / more exercise / eq;	Ignore better healthcare / medicine / education / alone Ignore stress eat more healthily = 0 Allow more aware of effects of smoking	1

(d)	1. ss oxygen; 2. ss (aerobic) respiration; 3. anaerob respiration; 4. ctic acid / low pH; 5. enzy s denatured;	Ignore glucose	max 3

Total 12 marks