Question number	Answer	Notes	Marks
1(a)(i)	1. up r epidermis; 2. tr sparent / lets light through / no chloroplasts;	waxy cuticle is transparent = 1	2
(ii)	1. p isade; 2. d sely packed / aligned vertically / eq; 3. i a of many / lots of chloroplasts; 4. sorb / take in / trap light;	ignore lots of chlorophyll	3 max
(iii)	1. ongy; 2. a spaces; 3. ffusion / movement of gases / gas exchange / eq; 4. xylem vascular bundle; 5. tr sport water;	Ignore phloem	3 max
(iv)	1. gua cell; 2. op / close; 3. let in carbon dioxide / water loss / transpire / evaporate / eq;	Ignore stomata Ignore gas exchange	2 max
(b)	1. lo r surface in water / upper surface exposed to air; 2. allows carbo dioxide in; 3. allows transpiration / evaporatio / water loss / eq;	Ignore gas exchange Allow converse for Mps 2 and 3	2 max
(c)(i)	20;		1
(ii)	fewer/no stomata / holes / pores / guard cells;		1

Total 14 marks

Question number	Answer	Notes	Marks
2	C garlic and no garlic / different amount / mass of garlic; O same age / species / same gender of mosquito / eq; R lots of people / repeat / eq; M1 count number of mosquito bites / landing / eq; M2 per hour / day / same time period stated; S1 and S2 same light / same temperature / same time of year / same diet of people / same gender or age or mass of people / same clothing or exposure of skin / same number of mosquitoes / eq;;	Ignore location / place / room/ environment	6 max

Total 6 marks

Question number	Answer	Notes	Marks
3(a)(i)	oxygen / O_2;	Ignore O	1
(ii)	Four from: 1. temperature; 2. waterbath / glass screen / eq; 3. carbon dioxide; 4. add same mass of hydrogen carbonate to water / eq; 5. light <u>intensity</u> / wattage of bulb / eq; 6. distance from lamp / use a light meter / same bulb / background light / eq; 7. mass / surface area of plant / number of leaves / species / same plant;	Mps in pairs Mp2 ignore control of room temp. / using a thermometer Plant as variable 1 max	4 max
(b) (i)	25 / 24.7 / 24.6 recurring; 1. (red and blue) have been repeated / show	Ignore 24.6 Allow 24.6 = 25 Ignore 24.67	1

(ii)	similar pattern; 2. (green) ignored anomalous result / green only two repeats;		2
(c)	S y axis scale linear and graph at least half the grid; A y axis labelled number of gas bubbles / number of bubbles / rate of photosynthesis; U released in one minute / per minute / in one minute; P <u>average</u> plotted correctly for blue and green; K colour bars identified; Line graph loses P Allow S and A if axes reversed		5
(d)	1. blue light absorbed; 2. green light reflected / transmitted / not absorbed / eq;		2 max

Total 15 marks

Question number	Answer	Notes	Marks
4	plasma; red; haemoglobin; aerobic; carbon dioxide; platelets; antibodies; phagocytes;	 Allow macrophage / neutrophils	8

Total 8 marks

Question number	Answer		Notes	Marks
5	C	with and without vitamin D / range of vitamin D / different volume of milk;		6 max
	O	same age / same ethnicity / same gender / same health / eq		
	R	more than one child per treatment / repeat investigation / eq;	R Allow group if per treatment	
	M1	measure straightness of legs / height / count number with rickets / curvature / eq;	M1 Ignore mass	
	M2	time period must be minimum of one month;		
	S1 and S2	same area or same town or same country / same exposure to sunlight or same time outside / same time of year / same diet / eq;;	S Ignore same temperature / same room / same exercise / same sleep	

Total 6 marks