

Question number	Answer	Notes	Marks
1(a)(i)	1. <u>upper</u> epidermis; 2. transparent / lets light through / no chloroplasts;	waxy cuticle is transparent = 1	2
(ii)	1. palisade; 2. densely packed / aligned vertically / eq; 3. idea of <u>many</u> / <u>lots</u> of chloroplasts; 4. absorb / take in / trap light;	ignore lots of chlorophyll	3 max
(iii)	1. spongy; 2. <u>air</u> spaces; 3. diffusion / movement of gases / gas exchange / eq; 4. xylem / vascular bundle; 5. transport water;	Ignore phloem	3 max
(iv)	1. guard cell; 2. open / close; 3. let in carbon dioxide / water loss / transpire / evaporate / eq;	Ignore stomata Ignore gas exchange	2 max
(b)	1. lower surface in water / upper surface exposed to air; 2. allows carbon dioxide in; 3. allows transpiration / evaporation / 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 <u>mosquito</u> / 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

(ii)	<p>similar pattern;</p> <p>2. (green) ignored anomalous result / green only two repeats;</p>		2
(c)	<p>S y axis scale linear and graph at least half the grid;</p> <p>A y axis labelled number of gas bubbles / number of bubbles / rate of photosynthesis;</p> <p>U released in one minute / per minute / in one minute;</p> <p>P <u>average</u> plotted correctly for blue and green;</p> <p>K colour bars identified;</p> <p>Line graph loses P Allow S and A if axes reversed</p>		5
(d)	<p>1. blue light absorbed;</p> <p>2. green light reflected / transmitted / not absorbed / eq;</p>		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;	R Allow group if per treatment M1 Ignore mass S Ignore same temperature / same room / same exercise / same sleep	6 max
O	same age / same ethnicity / same gender / same health / eq			
R	more than one child per treatment / repeat investigation / eq;			
M1	measure straightness of legs / height / count number with rickets / curvature / eq;			
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;;			

Total 6 marks