

Nutrition

Mark Scheme 6

Level	IGCSE(9-1)
Subject	Biology
Exam Board	Edexcel IGCSE
Module	Single Award (Paper 2B)
Topic	Structure and Functions in Living Organisms
Sub-Topic	Nutrition
Booklet	Mark Scheme 6

Time Allowed: 69 minutes

Score: /57

Percentage: /100

Grade Boundaries:

9	8	7	6	5	4	3	2	1
>90%	80%	70%	60%	50%	40%	30%	20%	10%

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 ignore names of gases	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;		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)	<u>sun/light</u> makes <u>vitamin D</u> ;		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)	1. idea of <u>high</u> 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. obesity / overweight / joint damage; 2. diabetes; 3. heart disease / heart attack / angina / cardiac arrest / eq; 4. blocks/narrows/build up <u>arteries</u> /blocks blood vessels / high blood pressure; 5. stroke	ignore vein / capillary	Max 2

(f)	1. weigh crisp / mass of crisp; 2. burn crisp / eq; 3. burnt completely / e 4. heat water / hold (burning crisp) under tube / hold (burning crisp) under water / calorimeter / eq; 5. volume of water / mass of water; 6. measure 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
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Total 13 marks

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

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. <u>villi</u> ; 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

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 and 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)	<u>phloem</u> ;	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