

# Coordination and Response

## Mark Scheme 5

<b>Level</b>	IGCSE(9-1)
<b>Subject</b>	Biology
<b>Exam Board</b>	Edexcel IGCSE
<b>Module</b>	Single Award (Paper 2B)
<b>Topic</b>	Structure and Functions in Living Organisms
<b>Sub-Topic</b>	Coordination and Response
<b>Booklet</b>	Mark Scheme 5

**Time Allowed:** 46 minutes

**Score:** /38

**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) (i)	obtain <u>light</u> for <u>photosynthesis</u> ;		1
(ii)	1. light / lamp; 2. dark room / even illumination / same light intensity everywhere / eq;	ignore temperature / species / water	2
(iii)	plant upright / clinostat / not on its side / eq;	allow answers that describe a clinostat	1
(b) (i)	less/no transpiration / less water loss / less evaporation / prevent wilting / prevent flaccid cells / eq;	ignore drying out	1
(ii)	1. less/no carbon dioxide; 2. photosynthesis; 3. less glucose / starch / carbohydrate; 4. less cooling / less transport of water / less transport of mineral ions;	ignore ref to gas exchange unqualified  ignore respiration	2

(Total for Question = 7 marks)

Question number	Answer		Notes	Marks									
2 (a)	<table border="1"> <thead> <tr> <th data-bbox="459 341 1169 453">Description of part</th> <th data-bbox="1173 341 1402 453">Name</th> </tr> </thead> <tbody> <tr> <td data-bbox="459 456 1169 571">contains light receptor cells</td> <td data-bbox="1173 456 1402 571"><u>retina</u>;</td> </tr> <tr> <td data-bbox="459 574 1169 689">neurone that sends impulses into the brain</td> <td data-bbox="1173 574 1402 689"><u>sensory</u>;</td> </tr> <tr> <td data-bbox="459 692 1169 871">microscopic gap between neurones</td> <td data-bbox="1173 692 1402 871"><u>synapse / synaptic (cleft) / synaptic (gap)</u>;</td> </tr> <tr> <td data-bbox="459 874 1169 986">contains muscle effector cells</td> <td data-bbox="1173 874 1402 986">(iris)</td> </tr> </tbody> </table>	Description of part	Name	contains light receptor cells	<u>retina</u> ;	neurone that sends impulses into the brain	<u>sensory</u> ;	microscopic gap between neurones	<u>synapse / synaptic (cleft) / synaptic (gap)</u> ;	contains muscle effector cells	(iris)	ignore optic	3
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2 (b)	1 more convex / fatter / wider / thicker / eq; 2 bend light / refract ; 3 ciliary muscle / body ; 4 contract / shorten / eq; 5 <u>suspensory ligaments</u> ; 6 slacken / less tension / loosen / less taut / eq;	more concave and wide = 0 ignore diffract  ignore relax	4 max
		<b>Total</b>	<b>7</b>

Question number	Answer	Marks
3 (a)	<b>A</b> conjunctiva; <b>B</b> lens; <b>C</b> ciliary muscle / ciliary body;	3
(b)	B/lens gets thick(er) / wide(r) / fat(ter) / more spherical / round(er) / <u>more</u> convex / more curved / eq; ignore smaller / bigger  C/ciliary muscle contract / eq; ignore constrict	2
(c) (i)	(in bright light) <u>pupil</u> ; constricts / smaller / eq; allow converse or (in bright light) <u>iris</u> ; gets bigger / eq; allow converse or (approaching object) <u>eyelids</u> ; close / blinking; or (approaching object) <u>lens</u> ; changes shape / change described; or tear (gland); dust /eq;	Max 2
(ii)	allows less light into eye / prevent damage / eq; (converse: allows more light into eye / to see / eq;) protection; focus / see clearly / eq;	Max 1
(iii)	name of hormone; eg ADH site of production ; eg pituitary effect; eg more concentrated urine / eq	Max 3

Hormone	Site of production	Effect
ADH	pituitary	produces concentrated urine / eq
adrenaline	adrenal	increases heart rate / eq
insulin	pancreas	converts glucose to glycogen / eq
oestrogen	ovaries	thickens uterus lining, secondary sexual characteristics
progesterone	ovaries / corpus luteum / placenta	prepares uterus lining, maintains pregnancy / eq
testosterone	testes	sperm production, secondary sexual characteristics

Question number	Answer	Notes	Marks
4 (a)	removal / eq;  waste products of cells / metabolism / respiration / chemical reactions;	getting rid of toxic waste = 1 ignore toxic ignore examples such as CO <sub>2</sub> / urea MP2 reject if ref to egestion/faeces	2
(b) (i)	release <u>sweat</u> / <u>sweating</u> / eq; evaporation / eq; cooling / heat loss / eq;		3
(b) (ii)	vasodilation / dilate / widen / expand / eq; (more) <u>blood</u> to skin/surface / <u>blood</u> near to skin/surface; cooling / heat loss / eq;	ignore names of blood vessels ignore vasoconstriction reject blood vessels moving	3
(c) (i)	lower blood glucose / lower blood sugar / eq; glycogen; liver / muscle;	must be stated converts glucose to glycogen = 1	max 2
(c) (ii)	1 control water level / water regulation / osmoregulation / eq; 2 permeability / eq; 3 <u>collec ing duct</u> ; 4 water reabsorption / water into blood / water into body / less waterloss from body / more concentrated urine / less urine / eq;		max 3
		<b>Total</b>	13