Characteristics and Classification of Living Organisms

Mark Scheme 5

Level	IGCSE
Subject	Biology
Exam Board	CIE
Topic	Characteristics and Classification of Living Organisms
Paper Type	(Extended) Theory Paper
Booklet	Mark Scheme 5

Time Allowed: **38 minutes**

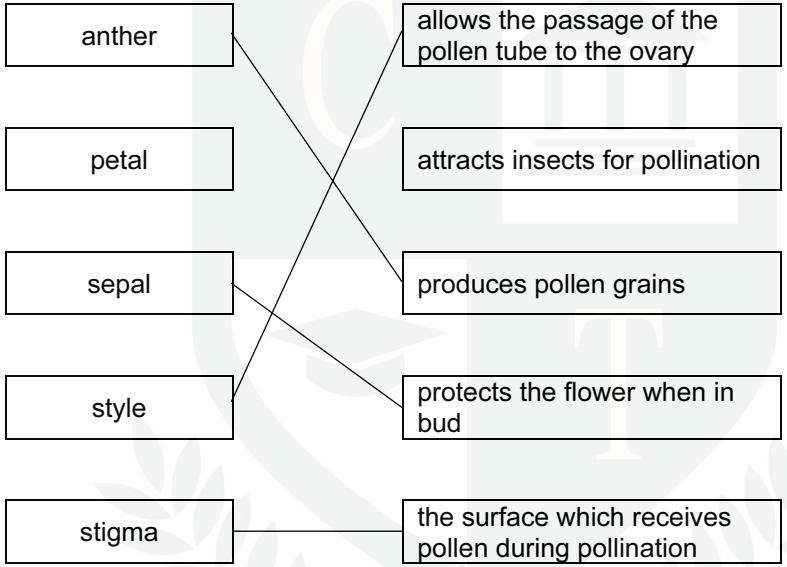
Score: **/31**

Percentage: **/100**

Question	E	Answers	Marks	Additional Guidance
1 (a)		broad leaves / *Ranunculus* does not have narrow leaves / AW ; branched veins / not parallel veins ; flower parts, in 5s / not in 3s ; **R** 'flowers in fives'	[max 2]	**A** wide / large surface area **A** net(work) of veins / reticulate **I** two cotyledons
(b)	1	(cells of **W** were) in, the winter / cold / low light / short days / AW ; **I** refs. to water		*assume answers refer to **W** unless told otherwise – accept ORA for **S*** **1** (cells of **S** were) in summer / warm / high light / AW ; **I** refs. to water
	2	starch, has been used / converted to glucose *or* sugar / broken down ;		**2** starch has been, stored / produced ;
	3	to provide energy ; **R** 'produce'		
	4	in respiration ;		
	5	to keep the, plant / cells, alive ; **I** for growth, etc.		
	6	root has become a source (not a sink) ;		**8** result of (more) photosynthesis ; **6** root is a sink (not a source) ;
	7	when there has been, no / few, leaves ;		
	8	so there has been, no / little / less, photosynthesis ;		**7** many leaves ;
	9	ref. to, light / temperature / cold, as limiting factor(s) ;	[max 3]	
(c)	1	sucrose / sugar, transported / translocated ; **A** travels / in phloem		*if given breakdown of starch award MP6 to 9 only*
	2	glucose / monosaccharide ;		
	3	joined together (by chemical bonds) ; **R** if refers to joining sucrose		**A** 'join together to make maltose'
	4	condensation reaction / described ;		
	5	glucose added to growing chain / AW ;		
	6	(starch is a) long / chain, molecule ; **A** is a polysaccharide		**A** polymer / polymerisation
	7	enzyme provides active site for reaction ;		
	8	enzyme, catalyses / speeds up, the reaction ;		**A** enzyme(s) is/are (biological) catalyst(s)
	9	ref. to lock and key (model) ;	[max 3]	

Question	E	Answers	Marks	Additional Guidance
1 (d)	1 2 3 4 5	increase in (kinetic) energy ; more, collisions / AW ; between, enzyme / active site, and, substrate / AW ; ref. to optimum temperature / works best at ≈ 30 °C ; denatured, at high temperature / above 30 °C / above optimum ;	[max 2]	**I** particles, movement **R** 'destroyed' / 'killed' / 'damaged'
			[Total: 10]	

2 **(a** *reject lines to or from the same box, e.g. anther and petal to produce pollen grains*
A *if lines do not touch box but meaning is clear*



[4]

(b) *assume answer is about stigma of wind-pollinated flower unless told otherwise, accept* ***ora****, 2 max for differences, 1 or 2 for significance*

wind-pollinated stigma,	*insect-pollinated stigma*
feathery / hairy **;** **R** branched *ignore not sticky*	not, feathery / hairy **;** *ignore sticky*
large(r) **;** **A** large surface area	small(er) **;** **A** small surface area
outside flower / AW **;** **A** pendulous / exposed *ignore long and short*	inside flower / AW **;** [2 max]

explanation
to catch pollen / AW (in the wind) **;** **A** for pollen to attach (to stigma)
or make pollination more likely / easier
increase chance of pollination **;**

'more likely to catch pollen' = 2 marks [max 3]

(c) **1** little / less / AW / no, <u>variation</u> **;** **R** cloning
2 ref to becoming homozygous **;** *ignore ref to gene*
3 e.g. of consequence 'good' or 'bad' **;**
e.g. less chance of adapting to changing conditions / less ability to evolve
may become extinct / adapted variety spreads / AW **;**
4 greater chance of pollination / ensures pollination occurs **;**
A reproduction / fertilisation
5 useful if no other plants (of same species) nearby **;**
6 less wastage of pollen **;** **A** gametes
7 not dependent on (named) agent of pollination **;** [max 3]

[Total: 10]

3 **(a)** **(i)** ref. to moist skin ; **[1]**

(ii) mammal ;
bird ;
fish ;
reptile ; **[max. 2]**

(b) ref. to both belonging to the same genus (or ref. to Bufo) ; **[1]**
(ignore refs. to both animals being toads)

(c) ref. to sand dunes becoming developed for + camp sites ;
ref. to habitat is changing e.g. to woodland ; Ⓐ ref. to loss of habitat
naterjacks cannot survive in colder habitats AW ; **[max. 2]**

(d) ref. to some heathland or sand dunes becoming protected areas AW ;
ref. to removal of trees / seedling trees AW + from heathland ;
ref. to creation of more heathland / sand dunes + introduction of natterjacks ;
ref. to captive breeding programmes ; **[max. 2]**

(e) secondary consumer / third level ; Ⓐ (top) carnivore **[1]**

(ii) insect larvae + adult insects ; (BOTH NEEDED FOR 1 MARK) **[1]**

(iii) ref. to a wider range of food sources AW ; **[1]**

[max. 11]