

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

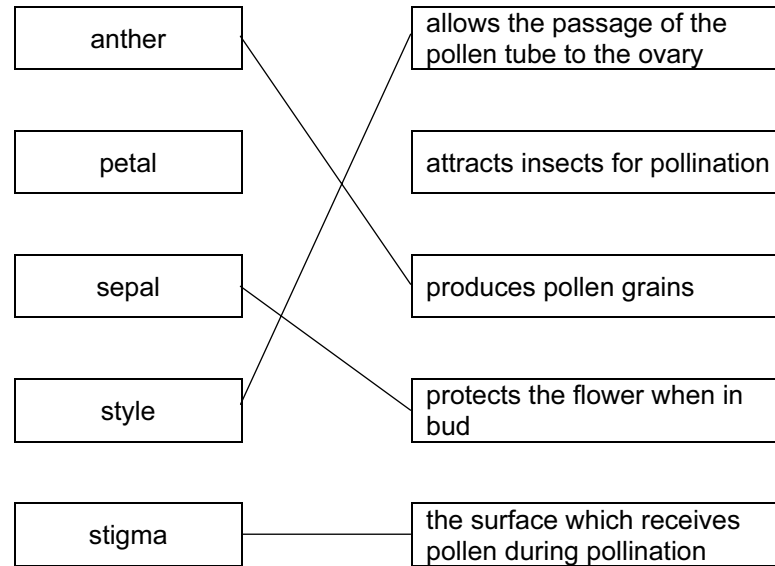
Score: /31

Percentage: /100

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

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 $\approx 30^{\circ}\text{C}$; <u>denatured</u> , 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

not, feathery / hairy ;

ignore not sticky

ignore sticky

large(r) ; **A** large surface area

small(er) ; **A** small surface area

outside flower / AW ;

inside flower / AW ;

A pendulous / exposed

ignore long and short

[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, variation ; **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
natterjacks 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]