

Name of the Student: _____

Max. Marks : 18 Marks

Time : 18 Minutes

Mark Schemes

Q1.

- (a) 7.15 to 7.45 am **and** 7.15 to 7.45 pm
***both** required, either order*
accept in 24 hr clock mode
1
- (b) (i) 11
1
- (ii) 32.5 to 33
allow answer to (b)(i) + 21.5 to 22
1
- (c) any **two** from:
- more photosynthesis than respiration
 - more biomass / carbohydrate made than used
allow more food made than used
 - so plant able to grow / flower
accept plant able to store food
2

[5]

Q2.

- (a) (i) increase (and then level off) **and** max / up to at 0.15 (%) (carbon dioxide)
ignore references to oxygen concentration only
ignore mention of 23 1
- (ii) CO₂ is limiting at low CO₂ / at first
ignore specific numbers 1
- light is limiting at high CO₂ / at end 1
- (b) **mark both parts together**
- effect: (oxygen) falls 1
- explanation: (oxygen) used for respiration
if no other marks awarded allow (effect) no change **and** (explanation)
no photosynthesis for 1 mark 1
- (c) more chlorophyll / chloroplasts 1
- allows more photosynthesis / description
for both marks must refer to more at least once 1

[7]

Q3.

- (a) (i) oxygen produced

1

- (ii) any **one** from:

- average / mean / median
ignore reliable / precise / accurate
- some may be anomalous
allow some may not float

1

- (b) (i) *do **not** allow answers in terms of time only*
*if candidate answers in terms of comparing rate of change then the rate of change of photosynthesis must be in the correct direction for **1** mark*

any **two** from:

- low intensity / below 12.5 / 2.5 - 12.5 (units of light) flat wrack / it, rate of photosynthesis faster **or** saw wrack rate of photosynthesis slower
allow any value in range
- high intensity / above 12.5 / 12.5 - 15 (units of light) flat wrack / it, rate of photosynthesis slower **or** saw wrack rate of photosynthesis faster
allow any value in range
- same (rate) at 12.5 units

2

- (ii) any **two** from:

- saw wrack receives less light
accept converse if clear reference to bladder wrack
- less photosynthesis
if first and second responses, 'less' needed only once
or
less carbohydrate / sugar / starch production

- when tide is in **or** at high tide **or** any tide above low tide
accept saw wrack covered by water / submerged longer / more
reference to position on shore is insufficient

2

[6]