

Name of the Student: _____

Max. Marks : 27 Marks

Time : 27 Minutes

Mark Schemes

Q1.

- (a)
- 1 5C / RuBP combines with CO₂;
 - 2 to form 3C compound / TP / GP;
 - 3 using ATP;
 - 4 and reduced NADP / eq;
 - 5 2 molecules of 3C compound / TP / GP form hexose;
 - 6 all RuBP is regenerated;
 - 7 10 molecules of 3C / TP / GP form 6 molecules of 5C / RuBP;

6 max

- (b)
- 1 electron transport chain accepts excited electrons;
 - 2 from chlorophyll / photosystem;
 - 3 electrons lose energy along chain;
 - 4 ATP produced;
 - 5 from ADP and P_i;
 - 6 reduced NADP formed;
 - 7 when electrons (from transport chain) and H⁺ combine with NADP;
 - 8 H⁺ from photolysis;

6 max

- (c)
- 1 some hexose / biomass / eq. used in respiration;
growth cancels this point
 - 2 CO₂ produced (is lost to air);
 - 3 some parts of the plant are eaten / some parts lost to decomposers
/ in leaf fall;

3

[15]

Q2.

(a) (i) decomposers convert (nitrogen in organic compounds) into ammonia / ammonium; suitable example of "organic nitrogen" - protein / urea / amino acid etc. (e.g. linked to process); nitrifying bacteria / correctly named convert ammonium to nitrate; via nitrite;

3

(ii) convert nitrogen (gas) into ammonium / ammonia / amino acids; add usable / available nitrogen to an ecosystem / eq.;

2

(b) (i) 1. numbers of dispersed bacteria increase as they feed on organic matter;
2. numbers of free-swimming protoctistans increase because number of bacteria increase;
3. dispersed bacteria decrease as amount of dispersed organic matter decreases / due to lack of food / as organic matter is converted to flocs / are preyed on by free-swimming protoctistans;

3

(ii) 1. (in a succession) organisms (enter an area and) change the environment / conditions creating new niches / habitats;
2. allows different species / different types of organisms to enter / be successful;
3. dispersed bacteria change dispersed organic matter to flocs;
4. presence of flocs allows crawling protoctistans to enter / to increase / to be successful;

4

[12]