

Name of the Student: _____

Max. Marks : 18 Marks

Time : 18 Minutes

Mark Schemes

Q1.

- | | | |
|-----|--|---|
| (a) | Genetic (factors)/genes/alleles/mutations/meiosis; | 1 |
| | Environmental (factors)/environment; | 1 |
| (b) | New species form from different populations/groups/gene pools; | 1 |
| | In different areas/from isolated populations;
<i>Accept alternatives/descriptions for 'populations'</i> | 1 |

[4]

Q2.

- (a) Parents without CF → offspring with CF / 1 + 2 → 6 / 7 + 8 → 10;

Each parent must have CF allele / offspring receives CF allele from both parents / both parents heterozygous / both carriers;

2

- (b) **Nn** and **Nn** (no mark since awarded in (a) already)

Accept alternative symbols

N n and **N n**;

Ignore X and Y

NN and **Nn** and **Nn** and **nn**;

Correct allocation of phenotypes to genotypes;

Probability = 0.125;

Accept answers expressed as chance rather than probability, eg 1 in 8 / 1 to 7 / 12.5%;

4

[6]

Q3.

- (a) Formation of new species / reproductive isolation;
Ignore ref. to mechanisms involved

From a population (living in the same area / place) /
without geographical isolation;

2

- (b) Small shell of T,
Accept converse statements

Wave action (greatest) at top of shore;

*Note – pairs of statements – environmental factor; and possible effect
on survival;*

Only small snails can get into cracks in rock (to shelter);
Thick shell of M,
More crabs in middle shore;

No mark for giving differences

Thicker shelled snails less easy to break open;

OR

More rocks in middle shore to be moved by waves;
Thicker shelled snails less easily broken by rocks;
Large opening of T,
More wave action likely to wash snails away;
Larger opening, (suggests) snails with larger foot to hold on with
less likely to be washed away;

OR

Smaller opening of M,
More crabs in middle shore;
Snails with smaller opening harder to get claws into;

4 max

- (c) Reproductive isolation required for speciation;
Accept descriptions of reproductive isolation

Isolation by male choice / form T males nearly always choose
form T female, so (nearly) reproductively isolated (from form M);
Behavioural isolation / mechanism;

2 max

[8]