Mark schemes

Q1.

(a) 1. Answer of 12/13 = **2 marks**;;

2. 0.36(48)/0.365/0.37 **= 1 mark**

OR

36(.48)/36.5/37% = **1 mark**

OR

q^2= 0.06/0.059/0.0588 = **1 mark**

OR

or q = 0.2/0.24/0.243 = **1 mark;**

For 1 mark accept q^2 = 6%/5.9%/5.88%

2

(b) 0.71

1

Q2.

(a) 1. No (functional) cones
OR
Only rods;

2. Cones are connected to a single neurone
OR
Several rods connected to a single neurone;

Accept correct reference to retinal convergence
Accept 'bipolar/nerve cell' for neurone
Accept 'many' 2 or more for 'several'

3. (Cones) Separate (sets of) impulses to brain
OR
(Rods) Single (set of) impulse/s to brain;

Accept 'optic nerve' for brain
Reject 'signals', 'messages' for 'impulses'
Accept 'action potential'

3

(b) 1. Correct answer in range 42 – 44% = 2 marks;;

2. Incorrect answer but shows that understanding that 2pq = heterozygous/carriers = 1 mark;

Accept 1 – (p^2 + q^2)
Accept understanding of 2pq by using calculation involving 2 × two different numbers

2

Q3.

(a) All the alleles in a population;

Accept: The number of alleles in a population.

Note: All or number of alleles in a species on its own is not enough on its own.

1

Q4.

(a) 0.32.

Correct answer = 2 marks

Accept 32% for 1 mark max

Incorrect answer but identifying 2pq as heterozygous = 1 mark

2

(b)
1. Mutation produced *KDR minus* / resistance allele;
2. DDT use provides selection pressure;
3. Mosquitoes with *KDR minus* allele more likely (to survive) to reproduce;
4. Leading to increase in *KDR minus* allele in population.

4