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'

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(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 <u>alleles</u> in a population;

> *Accept: The number of alleles in a population.*
>
> *Note: All or number of <u>alleles</u> 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.

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