

Name of the Student: _____

Max. Marks : 19 Marks

Time : 19 Minutes

Mark Schemes

Q1.

- (a) Competition described / named biotic factor (that they might compete for);

Reject ref. to predation or abiotic factors

1

- (b) (i) Not many animals brought home during this period;

Overall, detached bring in most animals;

Mostly mammals, (fewer birds) and fewest frogs;

Idea of 'preference', not just restating data

Cats prefer mammals to birds / find mammals easier to catch;

Idea of 'preference'/'availability', not just restating data

Cats do not prefer frogs / have fewer frogs to catch;

Cats in flats take very few birds or frogs;

Suitable use of standard deviations;

2 max

- (ii) Suggestion; with explanation;

Note that sample size is large – reject ref. to small / sample sizes.

Examples,

Method underestimates prey;

(Because) cats don't bring some prey home/eat it before seen;

Cats may kill other animals;

But don't bring them home/eat them;

Don't know how many cats in each type of housing;

So comparisons difficult;

Overlap of SDs (in some cases);

So no significant differences between means / named examples where this is so;

Don't know details of housing;

May have different amounts of prey / types of prey around;

Number of prey not large;

So, possible large variability in results;

2 max

- (c) (i) Wearing a bell reduces/affects/changes a cat's probability of catching prey;

Accept statements of – Null hypothesis that wearing a

bell makes no difference to probability of catching prey

1

- (ii) No (significant) difference for birds and frogs;
(Significant) fall in mammals caught;
Suitable ref. to standard deviations;
Reject mammals and birds fall

2 max

[8]

Q2.

- (a) sandy stated as heterozygous / suitable allusion to alleles;
suitable cross chosen; (as in table)

N.B. second two points linked, not stand-alone

explained why could not be codominance;

N.B. Second two points linked, not stand alone

Suitable cross	Reason why not codominance
3 and 4	Offspring should all be sandy
10 and 11	Offspring should all be sandy
7 and 8	Offspring should all be red

*BUT if candidate assumes sandy is homozygous, mark accordingly
e.g. "look at cross 1 and 2; all their offspring would be sandy;"
and not that, if red or white then identified as heterozygote,
then full 3 marks are still possible.*

3

- (b) 11 aabb,

10 = AaBb, (N.B. only possibility, not A-B-)

2 = A_bb or aa B- (or one possible genotype);

if all 3 correct - 2 marks / if 2 correct - 1 mark; one or fewer - 0 marks

2

- (c) 1 mark for each element of clear explanation i.e.

- choice of a suitable piece of evidence;

- explaining why Hypothesis 2 could not account for the observed result;

*(only cross really possible is 1 and 2) i.e. if sandy was aaB_, individuals
1 and 2 would both have been aaB; so their offspring could only be
either white or sandy (as no A alleles present);*

2

- (d) (Mark line by line, not to 'first error': do not allow for consequential errors)

Individual 18

Other parent

Parental
genotypes

AaBb;

*No mark for this
(AaBb)*

Parental gametes **AB Ab aB ab**

and

Ab ab;

Offspring
genotypes

AABb	Aabb	AaBb	Aabb
AaBb	Aabb	aaBb	aabb

(Punnett not necessary)

*Offspring
phenotypes*

red

sandy

white

Expected ratio

3

4

1;

4

[11]