

Mark schemes

Q1.

- (a) Binomial;

1

Q2.

- (c) Top to bottom
- C N D I**
- ;

ORTop to bottom **N C D I**;

1

- (d) 1. (Supported) more similar than with any other species;
-
2. (Not supported) high (intraspecific) variation in species N (compared with variation between N and C);

*Accept idea that species N has nearly as much variation as between N and C.**Accept 'Low/close similarity in species N (in relation to similarity between N and C)'*

3. Small sample

OR

Only five (individuals);

2 max**Q3.**

- (a) 1. (It shows) smaller groups within larger groups / larger groups containing smaller groups;

Accept groups within groups

2. With no overlap (between groups);

2

- (b)
- Family
- ;

Accept phonetic spellings

1

- (c) 1. Sine song is (very) similar / same length (for both, so closely related).

2. (But) have different peaks / pulses (in pulse song);

*Must give a difference, not just state they are different**Accept suitable differences eg number / length / amplitude / interval*

2

- (d) 1. (Three) peaks (in pulse song) occur at the same time (since both female) / songs identical / male peaks are different;
Accept suitable differences in male peaks eg number / length / amplitude / interval
2. (Therefore) no male (song) to stimulate / cause mating;
OR
 Nothing to stimulate / cause mating;

2

[7]

Q4.

- (a) 1. (Without genetic analysis / **X**) *mackloti* and *olivaceus* have a more recent common ancestor with each other (than with *papuana*);
2. (Genetic analysis indicates / **Y**) *papuana* and *mackloti* have a more recent common ancestor with one another (than with *olivaceus*);
Accept 'more closely related to' for 'more recent common ancestor'

2

(b)

Domain	Eukaryote
Kingdom	Animal
Phylum	Chordata
Class	Reptilia
Order	Squamata
Family	Python

;

All 5 correct = 1 mark
 Any errors = 0 marks

1

- (c) Genus / genera;
If the response has two answers no mark is awarded.

1

- (d) 1. The (base) sequence of DNA;
Accept 'DNA hybridisation'
2. The (base) sequence of mRNA;
3. The amino acid sequence (of proteins);

3

[7]

Q5.

- (a) 1. Same genus;
2. Same evolutionary origin / common ancestor.

2

(b)

Taxon	Name of Taxon
Domain	Eukarya
Kingdom	Animalia
Phylum	Chordata
Class	Mammalia
Order	Rodentia
Family	Muridae

3 correct = 2 marks
2 correct = 1 mark
1 or 0 correct = 0 marks

2

- (c) 1. (No) SDs of means of body sizes / sizes of parts of bodies overlap;
2. Calculation of correct head and body: tail ratios;
3. Almost identical, so same body shape / proportions;

3

- (d) 1. Breed the two mice together;
2. (Same species) produce fertile offspring.

2

[9]

Q6.

- (a) PKNJ.

1

- (b) *Lutra lutra*.

1

- (c) Bone / skin / preserved remains / museums.

1

- (d) 1. (Hunting) reduced population size(s), so (much) only few alleles left;

Accept bottleneck

2. Otters today from one / few surviving population(s);

Accept founder effect

3. Inbreeding.

*Allow any **two***

2 max

- (e) 1. Population might have been very small / genetic bottleneck;
2. Population might have started with small number of individuals /
by one pregnant female / founder effect;
3. Inbreeding.

*Allow any **two***

2 max

[7]

Q7.

- (a) 1. Kingdom, Phylum, Class, Order, Family;
2. *Luscinia svecica*.

1 mark for each correct column

*Allow Genus and Species if both placed in box for
species but not if both placed in genus box*

2