Name of the Student:_____
Max. Marks : 24 Marks **Time : 24 Minutes**

Mark Schemes

Q1.

(a) 1. Chromosomes (are) becoming visible/distinct;

2. Because (still) condensing;

OR

Accept 'chromosomes are condensed' for 2 marks.
Accept shorten or thicken for 'condensed'

3. Chromosomes (arranged) at random/not lined up;

4. Because no spindle (activity);

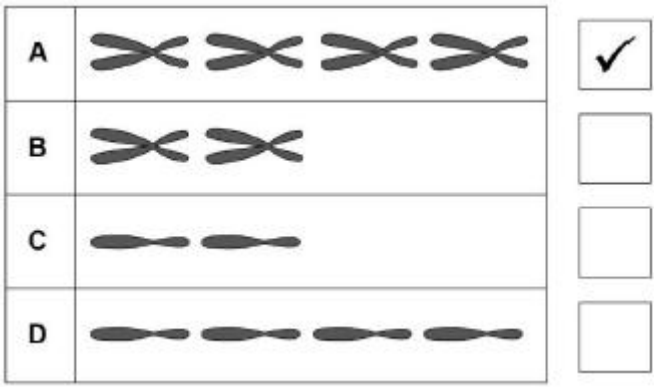
OR

Because not attached to spindle fibres;

Link marking points-
1 and 2
3 and 4

2

(b) A;



1

(c) Locus/loci;

1

(d) 1. (Because) base/nucleotide sequence;

2. (In) triplet(s);

3. (Determines) order/sequence of amino acid sequence/primary structure (in polypeptide);

3

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Q2.

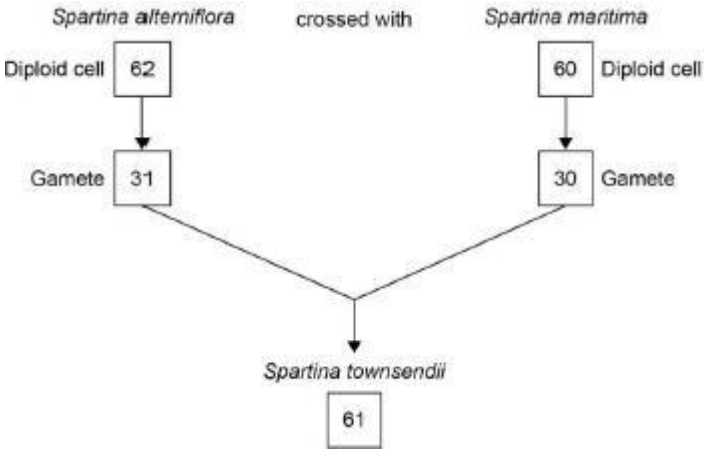
(a) Binomial;

1

(b) (A factor that) increases (the rate of) mutations;

1

(c) Correct answer - 60, 31 **and** 30;



1

(d) Name of mutation

1. Non-disjunction;

   Explanation

   Ignore homologous

2. (In) meiosis;

   Accept reference to first division or second division as indicating meiosis

   Ignore mitosis

3. Chromosomes not separated

   OR

   All chromosomes stay in one cell

   OR

   Chromosomes do not form (homologous) pairs;

   *Accept 'move to one side' **OR** 'move to one pole'*

3

(e) 1. Random fusion of gametes

   OR

   Random fertilisation;

   Accept for 'gametes',

2. (Produces) new allele combinations

   OR

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(Produces) new maternal and paternal chromosome combinations;

Reproductive cells

Ignore genes

2

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Q3.

(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

(c) Second box ticked/answer key: B:

The mutation that caused black fur happened in a common ancestor of *S. carolinensis* and other closely related species.

1

(d) 1. 2.55% **= 2 marks**;;

2. 2.61% **= 1 mark** (question misread ie 8/306x100)

OR

Evidence of dividing by 314 or 942 **= 1 mark**

OR

Answers **not** given to three significant figures **= 1 mark;**

2

(e) 1. Mutation/lack of glutamic acid leads to (permanent) activation of the receptor/protein;

2. (Because) the receptor/protein does not require the binding/leaving of αMSH (to become activated);

Answer must convey the idea that binding/leaving is not required

3. ASIP (might) not (be) able to bind to the receptor/protein;

4. (Only) the dark <u>pigment</u> is produced

3 max

[9]

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