Practice Question Set For A-Level
Subject : Biology
Paper-2 Topic: 8 The control of gene expressions

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Name of the Student:_____
Max. Marks : 27 Marks **Time : 27 Minutes**

Mark Schemes

Q1.

(a) (i) To cut the DNA;
Reject breakdown, cutting out
1

(ii) To separate the (pieces of) DNA;
1

(b) Complimentary base sequence / complementary DNA; binds to both (haplotypes);

Label would show up in both;
Idea of complimentarity required
2

(c) (i) Y chromosome inherited / comes from male parents / only found in males;
1

(ii) Mitochondria in egg / female gamete / no mitochondria come from sperm / male gamete;
1

(d) (i) Allows comparison;

Different (sized) areas covered;
2

(ii) Wolves do not eat all of prey animal / do not eat (large) bones / skin;

Inedible parts make up different proportions / wolf eats different proportions;
2

(e) Limited by food / prey; as prey increases so do wolf numbers / positive correlation;

Large range so other factors involved;
2

[12]

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Q2.

(a) Given only saline;

Otherwise treated exactly the same way;

2

(b) Ethical consideration, e.g., leads to death / suffering of mice;

Large number to improve reliability / reduce sampling error;

Number of mice related to cost / space available / animal husbandry;

2 max

(c) Vary in shape / do not grow uniformly;

Q *Allow descriptions of variation in shape.*

1

(d) 7.44 and 1.74;;

7.42 and 1.72;;

(Ratio) 4.28 : 1;;

(Ratio) 4.31 : 1;;

(Percentage decrease) 76.6%;;

(Percentage decrease) 76.8%;;

Any of the answers shown gain two marks.

An answer of 23.4% or 23.2%
Percentage decrease gains one mark.

Correct method of calculating rate / ratio / percentage increase with an incorrect answer gains one mark.

2 max

(e) Reference to Mitosis;

As chromosomes cannot attach (to spindle) / chromatids cannot separate (on spindle);

Q *Do not penalise confusion between chromosomes and chromatids in second marking point*

Cell division / cell cycle slows down;

Q *Mitosis slows down = 2 marks*

Q *Mitosis stopped = 1 mark*

Q *Mitosis must be spelt correctly*

3

(f) (i) (Degree of) spread / variation from the mean;

1

(ii) Both chemicals (on their own) slow down growth / are effective;

Taxol is more effective than OGF;

Combined treatment (seems) most effective;

SD overlap for OGF with taxol and taxol (on its own) so not conclusive / could be chance / both treatments could be equally effective;

Q *Ignore all references to significance*

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[15]

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