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 : 18 Marks **Time : 18 Minutes**

Mark Schemes

Q1.

(a) 1. Produce healthy (blood) cells;
Accept produce 'normal' /non-MDS cells.

2. No MDS/faulty/cancerous (blood) cells;
Produce only healthy/normal (blood) cells = ***two marks.***
Accept no (cancerous) tumour.

3. Stem cells divide/replicate;
Ignore reference to totipotent/pluripotent/ multipotent/unipotent
Accept 'clone' for divide.

3

(b) 1. (AZA) reduces methylation (of DNA/cytosine/gene);
Reject any reference to mutation.

2. (Tumour suppressor) gene is transcribed/expressed;
Accept mRNA produced for transcription/transcribed.
Ignore gene is 'switched on' or activated but allow protein is formed.

3. Prevents rapid/uncontrollable cell division

OR

Cell division can be controlled/stopped/slowed;
Ignore growth.

3

(c) 1. Effect of AZA can be compared;
Comparison on its own is not enough for a mark.

2. Unethical not to treat (control group);

2

(d) 1. Correct answer of 29/28.8 = **2 marks**;;

2. Working shows 0.74 **and** 0.58 = **1 mark**

OR

58/57.6 = **1 mark**

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OR

28 = **1 mark**;

2

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Q2.

(a) 1. Correct answer of 625 = **2 marks**;;

2. Shows 625 but decimal point incorrect = **1 mark**

OR

Working shows 40 = **1 mark**

OR

1600/1.6 = **1 mark**

OR

667/666.6 = **1 mark**;

2

(b) (Cell/membrane has a) phospholipid bilayer

OR

No channel/carrier protein (for uptake)

OR

No need for channel/carrier protein (for uptake);

1

(c) 1. Both are more effective than the control;

Mark points 4 to 10 = 4 max.

Accept both (results) are below the control.

2. Differences in the means not (likely to be) due to chance

OR

Significant difference (in effectiveness between both types);

Reject 'results are significant'.

Accept significantly higher or significantly lower in correct context.

3. (As) SDs do not overlap;

Accept error bars do not overlap.

4. HBsAg (reduced), not zero

OR

Replication (reduced), not zero;

5. Not (investigated in) humans

OR

(Investigated in) mice;

6. shRNA (more effective as) 7.5% (of control) compared with 50% for lhRNA;

Accept 42.5% difference.

Accept (mean) concentration for %.

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7. No indication of sample size/number;

8. Long term effects not known

OR

Side effects not known;

Accept 'could be toxic' for side effects not known.

9. No statistical test to determine significance;

10. (Investigated) in vitro

OR

Not (investigated) in vivo;

Accept not done inside an organism or not done in liver (organ) but 'only tested in liver cells' is insufficient unless qualified.

Ignore only 'one study' or 'no repeats'.

5 max

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