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) (i) protein / immunoglobulin;
specific to antigen;
idea of 'fit' / complementary shape;

2 max

(ii) 1. virus contains antigen;
2. virus engulfed by phagocyte / macrophage;
3. presents antigen to B-cell;
4. memory cells / B-cell becomes activated;
5. (divides to) form clones;
6. by mitosis;
7. plasma cells produce antibodies;
8. antibodies specific to antigen;
9. correct reference to T-cells / cytokines;

6 max

(b) 1. antibody gene located using gene probe;
2. cut using restriction enzyme;
3. at specific base pairs;
4. leaving sticky ends / unpaired bases;
5. cut maize / DNA / vector using same restriction enzyme;
6. join using DNA ligase;
7. introduce vector into maize / crop / recombinant DNA into maize;

4 max

(c) passive / person is not making own antibodies / antibodies not replaced;
memory cells not produced;

2

(d) fewer ethical difficulties / less risk of infection;

1

[15]

Q2.

(a) (i) Reverse transcriptase;

1

(ii) Idea that mRNA is present in large amounts in cell making the protein / mRNA has been edited / does not contain introns / mRNA codes for single protein;

1

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(b) (Ligase) splices / joins two pieces of DNA / “sticky ends”;

1

[3]

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