Name of the Student:_____
Max. Marks : 22 Marks **Time : 22 Minutes**

Mark Schemes

Q1.

(a) 1. (Free RNA) nucleotides form complementary base pairs;
*Accept A-U, G-C **OR** combination of those pairs*

2. Phosphodiester bonds form;
Accept linkages for 'bonds'

3. By (action of) RNA polymerase;

3

(b) Base/nucleotide/triplet sequence coding for polypeptide/sequence of amino acids/primary structure;

1

(c) Serine Alanine Glycine Proline;
Must be in this order Accept Ser Ala Gly Pro / S A G P

1

(d) Mark as pairs. 1 and 2 **or** 3 and 4.

(No)

1. G to C (in the second codon/for Glycine)

OR

CGT to CCT (in second codon/for Glycine);

2. (So), substitution (not addition mutation);
Reject if substitution of Glycine (for Alanine)

OR

3. (If addition) frameshift / all triplets moved;
4. (So), affects more than one amino acid;

2

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Q2.

(a) Histogram

1. Linear scale for *y* axis;

2. Linear scale for *x* axis;

3. Correct bar widths **and** touching;

4. All bar heights plotted accurately;

OR

Bar chart accept for 3 marks,

5. Linear scale for *y* axis;

6. Labelled bars of equal width **and** not touching;

7. All bar heights plotted accurately;

OR

Graph accept for 2 marks,

8. Linear scale for *y* axis;

9. All co-ordinates plotted accurately for frequency density;

Reject answers where data for frequency density and birth mass not used

4

(b) Correct answer for **2 marks** = 20 000;;

Accept for 1 mark, rearranged equation (eg number of babies = frequency density × range of mass)

2

(c) 1. Survival increases as the birth mass increases;

2. Survival decreases with smoking;

3. Effect of smoking (on number) similar at all birth masses;

3

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Q3.

(a) 1. Select at random;

Accept description of random technique

2. Large sample/number (of snails)/>10;

Ignore 'many'

2

(b) Mean **and** standard deviation;

*Accept **2** correct statistical values for 1 mark*
Accept any order
Accept average for mean
Accept standard error for standard deviation
Accept interquartile range

1

(c) (*Littorina* -) genus **and**

(*littorea* -) species;

Accept phonetic spelling
Accept genera

1

(d) 1. No (significant) difference between (mean) height (in these populations);

2. (Students) t-test;

Accept suitable null hypothesis

2

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