

NATIONAL 5 BIOLOGY SPECIMEN QUESTION PAPER

Section 1

Question	Response
1	D
2	A
3	A
4	A
5	B
6	C
7	B
8	A
9	C
10	D
11	A
12	D
13	B
14	D
15	B
16	B
17	D
18	A
19	C
20	C

Section 2

- Y
 - Large number of mitochondria present
 - Chloroplasts present = 1
they contain chlorophyll/green pigment/are green = 1
- From cell of alveolus wall to cell of capillary wall to plasma red blood cell
 - Oxygen moves from a higher concentration to a lower concentration
 - Osmosis would not occur **AND**
There is no concentration gradient/difference in concentration
- mRNA
 1. Bases = 1 2. C = 1
 - Amino acids
 - Different sequence/order of bases
- Hydrogen
 - Light energy is trapped by chlorophyll = 1
Light energy/it is converted into ATP = 1
ATP goes from stage 1 to stage 2 = 1
 - Light intensity
Carbon dioxide concentration

- Carbon dioxide
 - pH 5
Highest (average) number of bubbles (for most groups)
 - All flasks at same pH = 1
Yeast – different types of yeast in each flask
OR
Temperature – different temperatures
OR
Glucose – different glucose concentrations used = 1
- The hormone and receptor have complementary shapes/the hormone fits the receptor on the target cell only/target cell has specific receptors
 - Hormone message – chemical, carried in blood, long-lasting, carried all over body.
Nerve message – electrical, short-lived effect, carried along specific nerves/path
 - Type 1 – Insulin not produced
 - Would stay higher than normal/would stay too high
 - Pancreas
- Correct label copied exactly as in table and scale on y-axis (must use more than half of graph paper) = 1
Correct plot joined with straight lines = 1
 - Heart rate unchanged at low concentrations/
0.25-0.75ppm = 1
After that/from 0.75-2.00ppm heart rate decreases = 1
 - Agree – it affected water fleas, so could affect humans/both humans and water fleas have hearts so both could be affected.
Disagree – water fleas and humans are very different/this is only one study/not enough data to predict
OR
any other justifiable answer
 - To allow comparison with the ones with the hormone/to show the effect that the hormone had
- Heterozygous
 - | | |
|----|----|
| HH | Hh |
| Hh | hh |
 - HH or Hh
- Choose any two of arteries, veins and capillaries
Comparison of:
Thickness of walls
Muscularity of walls
Presence and absence of valves
Size of channel for blood flow
Any 3 correct
 - Carries oxygen
 - Although country B has less dying from heart disease, more of them die from childhood diseases/ infectious diseases
OR
Only one part of the data has been considered and the whole of the information needs to be taken into account

- (ii) Stop smoking/avoid smoke-filled environments/
take more exercise
10. (a) (i) Mouths are all different shapes/sizes/structures
(ii) A, B, D (any two) – they all rely on fish for
food
- (b) Niche
- (c) (3)-1-5-4-2
- (d) All the organisms living in a particular area and the
non-living components (with which they interact)
11. (a) L
- (b) Biomass – shows the total mass of living organisms/
population at each stage/level in a food chain
- (c) (i) 9700
(ii) Heat **OR** movement **OR** undigested material
12. (a) (i) As the mass of nitrogen fertilizer increases, the
average mass of root nodules decreases rapidly
until $0.4\text{g}/1\text{g} = 1$ then decreases more slowly = 1
(ii) Any mass $< 0.25\text{g}$ (including 0)
- (b) Nitrifying bacteria – converts ammonium
compounds into nitrites and/then nitrates
OR
Denitrifying bacteria – converts nitrates in soil into
nitrogen gas in the air
OR
Root nodule bacteria – fix nitrogen in the air into
nitrates
13. (a) (i) Initial populations all had different starting
sizes
(ii) 4.3
(iii) Starling and yellow wagtail
- (b) Biological control – explanation should relate to the
third, fifth or sixth items on the list
Explanation = 1
Further explanation = 1
OR
GM crops – explanation should be related to the
third, fourth, fifth or sixth items on the list
Explanation = 1
Further explanation = 1
Marks are for explanation only. Two explanations
from three are acceptable for 2 marks.
Answers must state **HOW** some of the disadvantages
are overcome