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|  | **Entrance Examination**  **March 2022** |
| **BIOLOGY 1: Molecules to Organs**  Time allowed: 1.5 hours (90 minutes)  **Answer THREE questions** | |

1. The tallest tree in Aberystwyth's county, Ceredigion, is a giant redwood *Sequoiadendron giganteum* over 40 metres tall. How does water get from the roots to the top of such a tree?
2. Discuss with examples the biological principle of ‘homeostasis’
3. Describe the organelles that can be found in cells. Do you know of any cell types missing particular organelles?
4. Imagine the biochemical story of a carbon atom, starting in an atmospheric CO2 molecule, and ending in CO2 breathed out by an animal.
5. In his book *River Out of Eden* (1995), Richard Dawkins says “The machine code of the genes is uncannily computerlike.” Explain this code and outline how it works.
6. Imagine you are a doctor with a patient suffering from any named disease of your choice. Describe the nature of the disease and possible treatment.
7. Write an essay on ‘Lipids’, discussing some structures, functions and dietary health implications.
8. How do muscles work?
9. Over the spring and summer, flowers will be appearing - explain the structures and functions of the organs within them.
10. Compare adaptations for oxygen uptake in different types of animal.
11. Write an essay on ‘Water as a Biological Molecule’.
12. What natural defences against infection do we possess?

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1. Give some examples of polysaccharides in nature, and outline the types of structures they have.
2. Write an essay on (any aspect of) ‘Skeletons’.
3. Imagine you are in the ‘Fruit and Vegetables’ section of a supermarket. Pick out a selection of

items and describe them in biological terms.

1. Describe the biology of a female human’s monthly ‘period’.
2. Describe how blood circulates around the human body.
3. Describe some physiological systems that show above-normal activity during sporting activity.

**END**