Comparative physiology Answers

They are larger, they are loosely packed.

2. Complete the table.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Decrease</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>Right</td>
<td>Left</td>
</tr>
<tr>
<td>Co2</td>
<td>Left</td>
<td>Right</td>
</tr>
<tr>
<td>Temperature</td>
<td>Left</td>
<td>Right</td>
</tr>
<tr>
<td>2,3-DPG</td>
<td>Left</td>
<td>Right</td>
</tr>
</tbody>
</table>

1. The increase in oxygen levels when placed in soil could be due to ________ stimuli.
   A tactile

2. At the end of the results section, the authors state that lowering the pH to 6.5 (from 7.5) had only minor influence on the t50 value (this value is not explained, but it seems to be the partial pressure of oxygen at which the haemoglobin is 50% saturated). Is this interesting? What might you have expected? Does this say anything about the physiology of the worm vs. the physiology of a mammal?
   Expected a rise in oxygen but maybe they are tolerant of lower pH.

Viscosity and Boundary layers

1. What is the reynold’s formula?
   \[ \text{Re} = \text{velocity} \times \text{linear dimensions} \times \text{density} / \text{viscosity} \]

2. High viscosity = ____ reynold’s number and low viscosity=____ reynold’s number.
   Low, high

3. What happens when a reynold’s number is high?
   When it is high, there is turbulent vortices due to pressure difference and increases drag.

4. What is the velocity of the fluid at the boundary layer?
   0

5. State bernoulli’s principle.
   Faster velocity means lower pressure; this is why the flight lifts.

6. What are the most abundant animals in the world?
   Copepods

7. Bigger creatures are dominated by ____ while smaller ones are dominated by____.
   Enertia, Viscosity

8. How do the copepods gain high velocity?
   By flicking their tails.

9. What are the two boundary types?
   Lamina flow and turbulent flow.

Kidneys

1. Do invertebrates have kidneys?
   Yes

2. State the three major functions of the kidneys.
   Diffusion, excretion and filtration

3. How much fluid is filtered per minute?
   12L per minute

4. What is a nephron?