UNIVERSIDADE EDUARDO MONDLANE

Direcção Pedagógica

Departamento de Admissão à Universidade (DAU)

Disciplina:	**INGLÊS**	**Nº Questões:**	**60**
Duração:	**120 minutos**	**Alternativas por questão:**	**5**
Ano:	**2017**		

INSTRUÇÕES

1. Preencha as suas respostas na FOLHA DE RESPOSTAS que lhe foi fornecida no início desta prova. Não será aceite qualquer outra folha adicional, incluindo este enunciado.
2. Na FOLHA DE RESPOSTAS, assinale a letra que corresponde à alternativa escolhida pintando completamente o interior do rectângulo por cima da letra. Por exemplo, pinte assim **A**, se a resposta escolhida for **A**
3. A máquina de leitura óptica anula todas as questões com mais de uma resposta e/ou com borrões. Para evitar isto, preencha primeiro à lápis HB, e só depois, quando tiver certeza das respostas, à esferográfica.

Water and Plants

With a few exceptions, plants make their own food from water and air. In order to survive, they act like pipelines, taking water out of the soil, delivering it to cells for use, and allowing whatever is left over to disperse into the air. The water, which is absorbed through fine root hairs underground, travels upwards through labyrinths of long microscopic tubes penetrating the stem and branches, and passes back to the atmosphere through tiny leaf pores called stomata. This latter process is called transpiration. A leaf with an area of 2.5 square centimetres may contain as many as 30,000 stomata, most of which are on the underside, and they release an astonishing amount of water. Although transpiration varies with conditions of temperature, humidity, light, wind and the moisture of the soil, it usually totals several hundred times the dry weight of the plant itself during a single growing season. During its lifetime, a crop of maize, for example, may release water sufficient to cover the entire field in which it has grown, to a depth of 28 cm. in one warm day, a single birch tree can dispose of 225 – 315 litres of water.

The mechanics of this remarkable capacious water-handling system are still not completely understood and the movement of water in certain plants – very tall trees, for example – poses one of the most intriguing puzzles of plant biology. What is known, however, testifies again to the distinctive characteristics of water. One of these characteristics is called osmosis.

Ground water enters the root hairs of a plant by a special kind of diffusion (osmosis) which is a fundamental process that goes on in nearly all living tissues. Through this process, water molecules are able to cross living membranes even though these membranes do not seem to admit water in the form of drops of liquid. This apparent paradox can be demonstrated with a piece of cellophane which is a synthetic membrane quite similar to natural ones. Cellophane is watertight in the sense that a drop of water placed on its surface will not drip though; a microscope reveals no pores. Yet, somehow, water crosses to enter the plant. This puzzling circumstance is resolved by a closer examination of the membrane. Pores do exist, but they are too small to be seen with an ordinary microscope. Like all substances. A membrane is composed of molecules, and the molecules, no matter how tightly they are packed together, have spaces between them. The spaces are large enough to accommodate water molecules but far too small to allow the penetration of water drops. Thus a drop may pass through the barrier, but only a few molecules at a time

Diffusion takes place because of the random movement of molecules. They bounce against one another and fly apart, tending always to spread from a region where they are closely packed together to regions of lesser concentration. This action is the same one that diffuses dissolved molecules through a liquid – and is the reason why a lump of sugar eventually sweetens a cup of tea or coffee whether the liquid is stirred or not.

The rate at which molecules slip through a plant's intermolecular structure depends on the size of both the molecules and the pores. Small molecules like those of water travel through the pores of living membranes at a fairly rapid rate. The larger molecules of soluble substances, like minerals, travel through much more slowly. This difference in the rate of progress across the membrane makes the membrane a kind of sieve, and this sieving action can build up a substantial pressure. The reason is that there are relatively more water molecules outside the plant than inside, where minerals are present in the liquid. As indicated above water molecules move to regions where their concentration is less and hence 'osmotic' pressure builds up.

1. **How is water taken out of the soil by a plant?**
   - **A.** The plant employs a pipeline for this purpose
   - **B.** The roots of the plant absorb moisture from the soil
   - **C.** The water is delivered to the plants by the cells
   - **D.** The plant absorbs the water from the ground
   - **E.** The plants make their own moisture from the soil

2. **The process called transpiration describes how:**
   - **A.** Water travels upwards through long microscopic tubes in the plant
   - **B.** Water passes from the atmosphere into the stomata
   - **C.** Water passes from the stem and branches into the atmosphere
   - **D.** Air is released into the plant as a form of vapour
   - **E.** The stomata release water into the atmosphere

3. **Which of the following options illustrates and explains the process known as diffusion?**
   - **A.** It describes how water penetrates nearly all living tissues
   - **B.** The word explains an apparent contradiction
   - **C.** It is the process through which water runs the stem of a plant