

## ANSWERS TO TEST YOURSELF QUESTIONS: CHAPTER 2

1. How do neurotransmitters get from the end of one neuron to another neuron?

*When the electrical impulse reaches the terminals of the neuron, there is a small physical gap called a synapse. Communication across the synapse occurs when the nerve impulse triggers the release of chemicals called **neurotransmitters**. These chemicals are released by the terminals of one neuron, and flow across the synaptic gap to the receptors of the next neuron.*

2. Describe three computerized imaging techniques used in studying brain activity.

*(1) The CAT scan uses a series of X-ray images which are combined by a computer to create a 3-D picture of the brain. It shows physical structures, but reveals nothing about the activity within the brain.*

*(2) Positron emission tomography (PET) scans use a short-lived radioactive substance injected into the bloodstream along with glucose, which is used by cells (including brain cells) for energy. The active areas of the brain absorb more of the glucose, and with it, the radioactive tracer. Sensitive detectors then pinpoint the location of the tracer and indicate which parts of the brain are most active.*

*(3) Magnetic resonance scans utilize the response of electric charges within cells to a rapidly changing magnetic field (resonance). Magnetic resonance can be used to study structures (MRI scans) or activity patterns (fMRI scans). fMRI is able to identify activity changes over intervals of only a few seconds.*

3. What is a "split brain"? How does studying this add to our knowledge of how the brain works?

*A "split brain" is a brain in which the two cortical hemispheres have been disconnected from each other by the severing of the connecting band of nerve fibres known as the corpus callosum. Studying this adds to our knowledge of the localization of functions within the brain.*

4. What effects does stress have on health?

*Stress triggers physiological responses that, when prolonged, lead to a wide range of disorders, including heart disease, viral infections, asthma and rheumatoid arthritis. Most particularly, chronic stress impairs the immune system, leading us to be susceptible to a variety of diseases.*