

GCSE Biology B (Twenty First Century Science)
J257/02 Depth in Biology (Foundation)

Question Set 19

1 Nina is walking in her garden with no shoes or socks on.

She steps on a sharp stone.



The sharp stone hurts Nina. Her foot moves away from the sharp stone quickly and automatically. This is a reflex response. It happens because of a **reflex arc** in Nina's nervous system.

Explain how the structures of Nina's reflex arc work together to move her foot away from the sharp stone without her having to think about it.

[6]

the sharpness of the rock is detected by pain receptors in the foot. This triggers an electrical impulse, which travels along the sensory neurone, to the central nervous system (CNS). When it reaches the end of the sensory neurone, it crosses a synapse via chemical neurotransmitters, reaching the relay neurone. It resumes as an electrical impulse, travelling through the spinal cord by the relay neurone to the motor neurone. The impulse crosses another synapse to get to the motor neurone, and from there it travels to the effector, a muscle, which causes the foot to pull away. (does not pass through the brain - so fast)

Total Marks for Question Set 19: 6

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