03 – HOMEOSTASIS *Learning Intentions*

I understand that…	I can…	Mastery Check
3.1 – HOMEOSTASIS		
3.1.1 Organisms survive most effectively within their tolerance limits. Factors for which organisms have tolerance limits include: • body temperature • water availability • blood glucose level • carbon dioxide concentration in the blood and tissues		
3.1.2 There are impacts on an organism when conditions fall outside its tolerance limits.		
3.1.3 Organisms detect and respond to changes in the internal and external environment.		
3.1.4 Homeostasis is the maintenance of a relatively constant internal environment. This ensures the optimum conditions for the body to function.		
3.1.5 In human beings, homeostasis depends on the functioning of the nervous and endocrine systems.		
3.1.6 Homeostasis involves a stimulus–response and negative feedback model.	☑ Describe the role of sensory receptors. ☑ Describe the role of effectors. ☑ Explain the stimulus–response model. ☑ Recognise that in negative feedback the response inhibits the initial stimulus.	

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3.2 – THE NERVOUS SYSTEM		
3.2.1 The nervous system is composed of the central nervous system and the peripheral nervous system.	☑ Compare the structure and function of sensory neurons, interneurons, and motor neurons. ☑ Describe the structure of a nerve pathway from receptor to effector. ☑ Describe the role of synapses and neurotransmitters. ☑ Describe the role and pathway of reflex responses.	
3.3 – THE ENDOCRINE SYSTEM		
3.3.1 The endocrine system releases hormones that are amino acid derivatives, peptides, proteins, or steroids.		
3.3.2 Hormones travel to target sites via the blood.		
3.3.3 Hormones can alter the metabolism of target cells, tissues, or organs.	☑ Compare the action of insulin and glucagon in blood sugar regulation. ☑ Describe how diabetes mellitus can result from a hormonal imbalance. ☑ Describe the action of thyroid stimulating hormone and thyroxine in metabolism. ☑ Describe the effect of antidiuretic hormone (ADH) on the nephron in osmoregulation. ☑ Discuss links between osmoregulation, blood volume, and blood pressure.	

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3.3.4 Hormonal responses can be stimulated by either the nervous system or other hormonal messages.	☑ Describe the role of thyroid-stimulating hormone in the production of thyroxine.	
3.3.5 The nervous system and endocrine system function independently or together to achieve homeostasis.	☑ Compare the action of the nervous and endocrine systems. ☑ Explain how the nervous and endocrine systems work independently or together to: • control body temperature • enable osmoregulation • maintain blood sugar level • monitor pH in the brain to maintain a constant carbon dioxide level.