**How well do I know Neurobiology?**

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| **1 Divisions of the nervous system and neural pathways** | **I know this.** | **I need to go over this.** | **I don’t know this.** |
| Structure of the central nervous system (CNS) and the peripheral nervous system (PNS). |  |  |  |
| The somatic nervous system contains sensory and motor neurons. |  |  |  |
| The autonomic nervous system (ANS) consists of the sympathetic and parasympathetic systems. |  |  |  |
| The antagonistic actions of the sympathetic and parasympathetic systems on heart rate, breathing rate, peristalsis and intestinal secretions. |  |  |  |
| Structure and function of converging, diverging and reverberating neural pathways. |  |  |  |
| **The cerebral cortex** | **I know this.** | **I need to go over this.** | **I don’t know this.** |
| The cerebral cortex is the centre of conscious thought. It also recalls memories and alters behaviour in the light of experience. There is localisation of brain functions in the cerebral cortex. It contains sensory areas, motor areas and association areas. There are association areas involved in language processing, personality, imagination and intelligence. |  |  |  |
| Information from one side of the body is processed in the opposite side of the cerebrum. Transfer of information between the cerebral hemispheres occurs through the corpus callosum. |  |  |  |
| **Memory.** | **I know this.** | **I need to go over this.** | **I don’t know this.** |
| Memory involves encoding storage and retrieval of information. |  |  |  |
| All information entering the brain passes through sensory memory and enters short-term memory (STM). Information is then either transferred to long-term memory (LTM) or is discarded. |  |  |  |
| Sensory memory retains all the visual and auditory input received for a few seconds. |  |  |  |
| Short-term memory (STM) STM has a limited capacity and holds information for a short time. The capacity of STM can be improved by ‘chunking’. |  |  |  |
| STM can also process data, to a limited extent, as well as store it. This ‘working memory model’ explains why the STM can perform simple cognitive tasks. |  |  |  |
| Long-term memory (LTM): LTM has an unlimited capacity and holds information for a long time. |  |  |  |
| The transfer of information from STM to LTM by rehearsal, organisation and elaboration. |  |  |  |
| Retrieval is aided by the use of contextual cues. |  |  |  |
| **The cells of the nervous system and neurotransmitters at synapses.** | **I know this.** | **I need to go over this.** | **I don’t know this.** |
| Structure and function of neurons — dendrites, cell body and axons. |  |  |  |
| Structure and function of myelin sheath. |  |  |  |
| Myelination continues from birth to adolescence. |  |  |  |
| Certain diseases destroy the myelin sheath causing a loss of co-ordination. |  |  |  |
| Chemical transmission at the synapse by neurotransmitters — vesicles, synaptic cleft and receptors. |  |  |  |
| The need for removal of neurotransmitters by enzymes or reuptake to prevent continuous stimulation of postsynaptic neurons. |  |  |  |
| Receptors determine whether the signal is excitatory or inhibitory. |  |  |  |
| Synapses can filter out weak stimuli arising from insufficient secretion of neurotransmitters. |  |  |  |
| Summation of a series of weak stimuli can release enough neurotransmitter to trigger an impulse. |  |  |  |
| Neurotransmitter effects on mood and behaviour: The functions of endorphins. |  |  |  |
| Endorphin production increases in response to severe injury, prolonged and continuous exercise, stress and certain foods. |  |  |  |
| The function of dopamine. |  |  |  |
| Many drugs used to treat neurotransmitter-related disorders are agonists or antagonists. |  |  |  |
| Other drugs act by inhibiting the enzymes that degrade neurotransmitters or by inhibiting reuptake of the neurotransmitter at the synapse causing an enhanced effect. |  |  |  |
| Recreational drugs can also act as agonists or antagonists. |  |  |  |
| Recreational drugs affect neurotransmission at synapses in the brain altering an individual’s mood, cognition, perception and behaviour. |  |  |  |
| Many recreational drugs affect neurotransmission in the reward pathway of the brain. |  |  |  |
| Drug addiction is caused by repeated use of drugs that act as antagonists. |  |  |  |
| Drug tolerance is caused by repeated use of drugs that act as agonists. |  |  |  |