KNOWLEDGE



## Physics Topic B10

The human nervous system

ORGANISER

Section 1: Key Te	rms	Section 2b: The Reflex Arc	Section 2c: The Synapse			
Homeostasis F Negative N Feedback (HT) c	Regulating <b>internal conditions</b> to keep them at an <b>optimum</b> , <b>despite</b> internal and external <b>changes</b> . Maintains optimum conditions for <b>enzymes</b> . Regative feedback ensures that <b>changes are reversed and returned back to the optimum level</b> .	Stimulus – a change in the environment	sensory neuron	synapse chemical	re-uptake of synapse chemical	
Section 2a: Nerve	Reflexes Key Terms	Receptor – <b>detects a stimulus</b>				
Central nervous system (CNS)	The brain and spinal cord together. Co-ordinates the response of effectors.	Sensory neuron – transmits electrical impulse travels to the CNS	motor neuron	receptor molecule		
Reflex action	A <b>fast, automatic</b> reaction. Does not involve thinking parts of the brain.	Relay neuron – in the <b>spinal</b> <b>cord</b> . Transmits electrical impulses <b>from the sensory to</b> <b>the motor neuron</b>	An <b>electrical</b> <b>impulse arrives</b> at the synapse.	Neurotransmitter molecules are released and	Neurotransmitter molecules fill receptors and	
Coordination Centre	Receives and processes information from receptors e.g. CNS, pancreas.	Motor neuron – transmits		synapse.	electrical impulse in the next neuron.	
Synapse	The gap between two neurons. Allows many different neurons to connect.	Effector – produces a	L	4		
Myelin sheath	Some neurons are surrounded by myelin. <b>Myelin insulates the neuron</b> and <b>speeds up</b> the transmission of <b>electrical impulses</b> .	response. Can be a muscle or gland   ↓   ↓   Response – the change in response to the stimulus	dendrite	dendron myelin	Nerve ending sheath	
Stimulus (1) Receptor Skin	Reflex arc 2 Sensory neuron 3 Integration center Interneuron 5 Effector		nucleus	axon	A A A A A A A A A A A A A A A A A A A	

## KNOWLEDGE

Lens replacement



Permanent solution, risk of vision loss

## **Physics Topic B10** The human nervous system (separate)

ORGANISER

Section 1: The b	rain				Section 3: The e	ye key terms and p	parts		
Cerebral cortex Outer wrinkly part, responsible language		rinkly part, responsible for e	ble for consciousness, intelligence, memory and		<b>Refraction</b> – the bending of light rays when they pass from one medium to another				
Medulla oblongata Controls unconscious acti		unconscious activities e.c	vities e.g. breathing and heartbeat		Part	Eunction			
Cerebellum	Respons	sible for muscle coordination	ion		Fait	Function			
Section 2: Studying the brain (HT) Study people with If a part of the brain has been damaged the			ed the 2		1 Retina	Where an image forms at the back of the eye, contains rods and cones			
brain damage	effect on the	patient can tell you what	this 9	1	2 Sclera	The white part, protects the eye			
Electrically	By observing	what stimulating different	t parts		3 Optic nerve	Send electrical impulses from the retina to the brain			
stimulate the	of the brain d	loes its possible to get an	idea of 8		4 Iris	Coloured muscle controls the size of the pupil			
brain what those parts do   MRI scans produce detailed pictures of the   brain. Scientists can see which parts are   active when people are doing things		arts do oduce detailed pictures of	of the 7	_ 3	5 Ciliary muscles	Contract and relax to change the shape of the lens			
		re 4 6		6 Suspensory ligaments	Controls the shape of the lens to focus light rays on the retina				
it is difficult			reating 5	5		Hole located in the centre of the iris of the eye that allows light to strike the retina			
cortex		Section 4: Focusing on near and distant objects			8 Lens	Refracts light to be focused on the retina			
		To look at <b>near</b> objects – ciliary muscles <b>contract</b> , suspensory ligaments		nents	9 Cornea	Refracts light through the pupil			
		slacken, lens becomes fat, increasing amount of refraction			Rods	Light sensitive receptor cells that let you see in low light conditions			
		To look at <b>distant</b> obje	leek at <b>distant</b> objectsciliany muscles <b>relay</b> cuspensery ligaments			Light sensitive receptor cells that let you see colour			
Medulla Oblong	ata	tighten, lens becomes	thin, decreasing amount of refraction			•			
Section 5: Correct	ting vision pr	oblems							
.ong sighted (HYPEROPIA)		When	re the image focuses	How to correct it			Why it occurs		
hort sighted (MYOPIA) Behind the ref In front of the			nd the retina	tina Convex le			I ne lens is too weak or the eyeball is too short		
			Where the image focuses				Why it occurs		
			ont of the retina	Concave le	ncave lens		The lens is too strong, or the eyeball is too long		
Contact lenses Good for spo			d for sports/activities, almost invisible. Could	rts/activities, almost invisible. Could cause infection if not sterilised properly					
aser eye surgery			Permanent correction of vision problems, however, surgery carries risks						