

Threshold potential:
_____mV

Resting potential:
_____mV

Site of the ETC

Site of Krebs Cycle

Glycolysis takes place in the _____ and does not require _____.

Where is the main site of photosynthesis in a leaf?

Name three things that may be manufactured from triose phosphate in photosynthesis.

How does the loop of Henle differ in desert animals?

Cell walls are made of _____ in plants, _____ in fungi and _____ in bacteria.

ATP is produced across the internal membranes of which two organelles?

Describe the structure and function of carbohydrates, proteins and lipids.

Outline anaerobic respiration

Draw and label the structure of ATP

How does ADH help with osmoregulation?

Balanced equation for respiration

Balanced equation for photosynthesis

How do guard cells and stomata facilitate gas exchange in plants?

What type of reaction occurs when ADP and phosphate form ATP?

What type of reaction occurs when ATP is broken down to ADP and phosphate?

What is the final electron acceptor of the ETC?

1&2 Revision

List some energy-requiring reactions

Why is ATP known as the universal energy currency in living organisms?

Summarise the link reaction

Summarise the stages of glycolysis

Which two coenzymes deliver hydrogen to the electron transport chain?

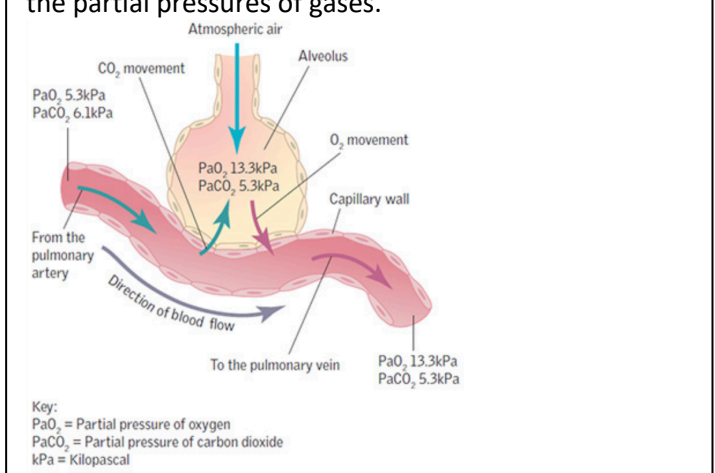
Summarise what happens in the Krebs cycle

Describe the formation of ATP via the proton pump mechanism (i.e. ETC)

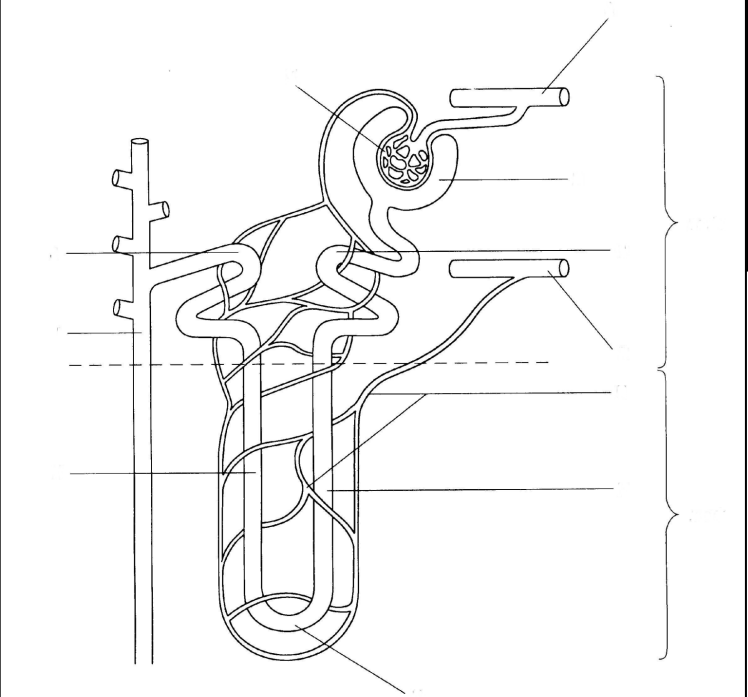
What is the difference between aerobic and anaerobic respiration?

What respiration stage can take place in anaerobic conditions?

Explain the direction of gas exchange, with reference to the partial pressures of gases.



Product per molecule of glucose	Glycolysis	Link Reaction	Krebs Cycle	Total
Reduced NAD				
Reduced FAD				
Carbon dioxide				
ATP				



Adaptations of alveoli to gas exchange and villi to nutrient exchange?

What are the advantages of a large SA:V?	What are the main roles of the cell membrane?	Definition of diffusion	Definition of osmosis	Definition of hormone																																	
	What is negative feedback?																																				
What is an enzyme?	Sketch the graph showing how enzyme action is affected by temperature	Definition of active transport	Definition of facilitated diffusion	Definition of exocytosis																																	
	Explain the difference between the lock and key theory and the induced fit theory. Draw diagrams to illustrate this.	Sketch the graph showing how enzyme action is affected by pH	Explain how low and high temperature affects the action of enzymes	The three components of phospholipids																																	
The two components of triglycerides																																					
What is competitive inhibition?	What is non-competitive inhibition?	Describe the differences between eukaryotic and prokaryotic cells																																			
		Bonds found in carbs	Bonds found in proteins	Bonds found in lipids																																	
Similarities and differences between animal and plant cells.	<table><tr><th>Factor</th><th>Impact on transpiration</th></tr><tr><td>Light</td><td></td></tr><tr><td>Humidity</td><td></td></tr><tr><td>Air speed</td><td></td></tr><tr><td>Temperature</td><td></td></tr></table>	Factor	Impact on transpiration	Light		Humidity		Air speed		Temperature		Why do single celled organisms not require specialised gas exchange systems?	<table><tr><th>Organelle</th><th>Role</th></tr><tr><td>Nucleus</td><td></td></tr><tr><td>Mitochondria</td><td></td></tr><tr><td>RER</td><td></td></tr><tr><td>SER</td><td></td></tr><tr><td>Golgi</td><td></td></tr><tr><td>Vacuole</td><td></td></tr><tr><td>Chloroplast</td><td></td></tr><tr><td>Lysosome</td><td></td></tr><tr><td>Cell wall</td><td></td></tr><tr><td>Cell membrane</td><td></td></tr><tr><td>Ribosomes</td><td></td></tr></table>	Organelle	Role	Nucleus		Mitochondria		RER		SER		Golgi		Vacuole		Chloroplast		Lysosome		Cell wall		Cell membrane		Ribosomes	
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		What are the differences between the structure of xylem and phloem?																																			
		What are the differences between the blood in the afferent arteriole and the efferent arteriole?																																			

Part	Function
Dendrites	
Cell body	
Nucleus	
Axon	
Myelin sheath	
Schwann cells	
Nodes of Ranvier	
Nerve/axon endings	

Transmission of the impulse across the synapse is _____ rather than electrical.

The chemical, or neurotransmitter, is enclosed in _____ vesicles at the end of the axon before the synapse.

The arrival of a nerve impulse depolarises the presynaptic membrane of this axon and _____ ions rush in.

This influx of calcium causes the vesicles to fuse with the presynaptic membrane and releases their contents into the synaptic _____.

The neurotransmitter diffuses across the cleft and _____ the postsynaptic membrane, propagating the impulse along the axon of the adjacent nerve cell.

What do hormones travel in?

The sodium-potassium exchange pumps maintain the concentration and an uneven distribution of sodium ions and potassium ions across the membrane.

Potassium (K⁺) are _____ inside the neurone while the concentration of sodium (Na⁺) is higher outside. The membrane is more permeable to K⁺ than any of the others.

Since the concentration of K⁺ is higher than outside they diffuse out. This outward movement of positive ions means that the inside becomes slightly _____.

Nerve impulses are due to changes in the permeability of nerve cell membrane to K⁺ and Na⁺ which leads to changes in the potential difference across the membrane and the formation of an _____ potential.

Suitable stimulation of an axon results in change of potential across the membrane from a negative inside value of about –70mV to a positive inside value of +40mV. This change is called an action potential. The membrane is said to be _____.

The action potential is the result of a sudden increase in the _____ of the membrane to Na⁺. This allows a sudden influx of Na⁺ which depolarises the membrane.

A fraction of a second after this, depolarisation the K⁺ diffuse out and repolarises the membrane. There is an overshoot of K⁺ leaving as the K⁺/Na⁺ pump restores the ionic balance. This is called the _____ period during which another action potential cannot be generated so ensuring a unidirectional impulse and limiting frequency.

Light dependent reaction

- Chlorophyll a (P680) molecules, in the PSII reaction centre, are excited and lose _____ when they absorb light energy (photons).
- These high energy electrons are transferred between electron acceptors and used in the generation of _____.
- Light is also absorbed by _____ and causes a P700 chlorophyll a molecule to emit two electrons and pass to electron carriers, again creating ATP.
- The hydroxide ion from the splitting of _____ is a source of electrons lost in PSII.
- Molecules of water are split into _____ ions, electrons and oxygen and the electrons are removed to replace those lost in the chlorophyll in the photosystems. Light is responsible only indirectly for splitting water.
- The splitting of water is referred to as _____. It occurs in the thylakoid space.
- NADP is created by the addition of electrons and hydrogen ions (protons).
- The light dependent stage produces reduced NADP, ATP and _____.

What is ultrafiltration?

What does homeostasis mean?

What is osmoregulation?

How is high filtration pressure created in the glomerulus?

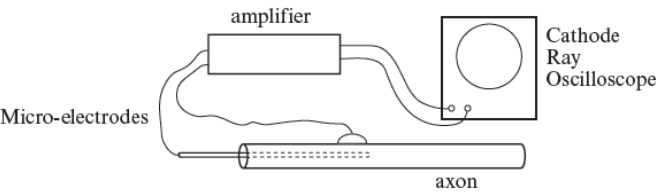
What is the ‘all or nothing’ law?

What is the purpose of myelination?

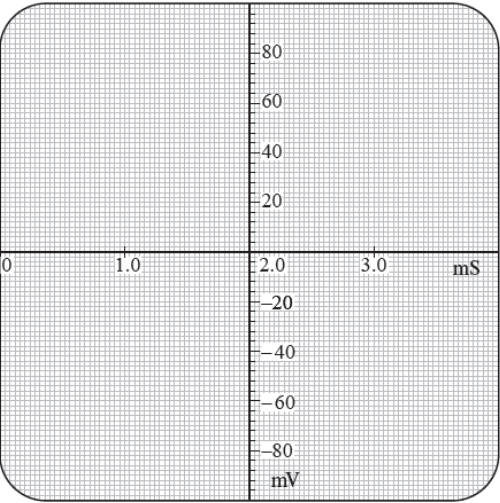
How is an action potential caused?

What occurs in the proximal convoluted tubule?

The equipment shown in the diagram below is used to measure electrical potential across the membrane of squid giant axons.



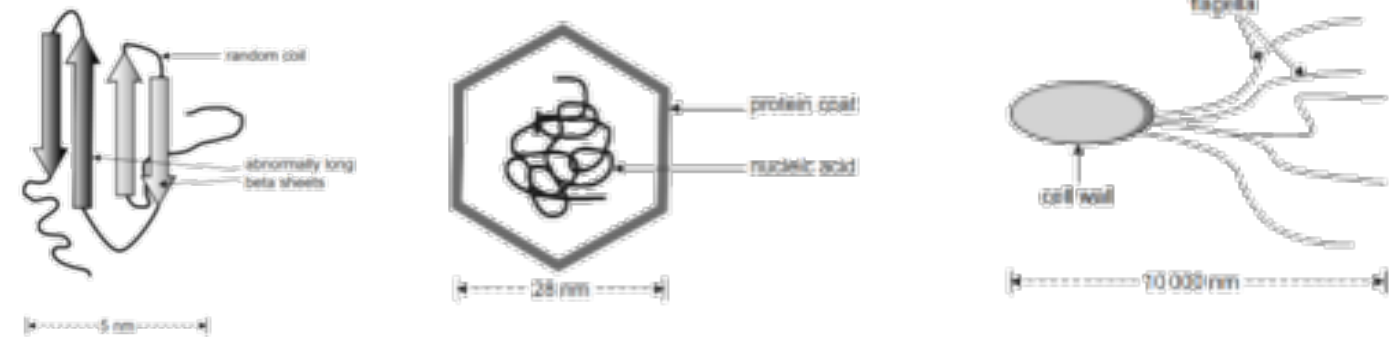
- (i) Use the grid below to draw a typical action as it would appear on the screen of the cathode ray oscilloscope. [2]



- (ii) Label your Action Potential to show, depolarisation and repolarisation. [1]

Outline the similarities and differences between sensory neurones and motor neurones.	What is xylem?	The loop of Henlé enables a _____ multiplier system to operate. Na⁺ and Cl⁻ ions are actively pumped out of the _____ limb into the tissue fluid of the medulla and diffuse into the descending limb. The ascending limb is relatively impermeable to water while the descending limb is _____. Water leaves the filtrate osmotically and the contents of the _____ limb become more concentrated. The ascending limb receives a filtrate rich in Na⁺. The maximum concentration occurs at the _____ of the loop of Henlé, both inside and outside in the extracellular fluid. Further water reabsorption occurs through the walls of the _____.	In terms of osmoregulation, what is the:	Define transpiration	
	What is phloem?		• Detector: • Coordinator: • Effector:		
	Leaves are a _____ of sugars and the growing tissues act as a _____.		Outline the light independent reaction (Calvin Cycle)		
Distinguish between catabolism and anabolism	Describe the roles of amylase, protease and lipase in chemical digestion.	Metabolic processes such as digestion are controlled by:	Summarise the process of mitosis (what happens in each stage).		
		Distinguish between unipotent, multipotent, pluripotent and totipotent stem cells.			
Draw the structure of a phospholipid bilayer		What is resting potential?	What are monomers?	What are polymers?	What are effectors?
Draw a labelled diagram of a synapse; synaptic knob, synaptic vesicle, neurotransmitter, mitochondria, pre-synaptic membrane, sodium channels, synaptic cleft, post-synaptic membrane.			Number of ATP produced in aerobic: _____ and anaerobic: _____		
			Resting potentials are typically minus values, the minus indicating the inside is negative with respect to the outside. The membrane is said to be _____.	What type of proteins are Na ⁺ /K ⁺ -pumps and channels?	

Name these pathogens. How do you know? Name some features.



Summarise the following virulence factors: adherence factors, invasion factors, capsules, toxins.

Difference between memory B cells and effector B (plasma) cells:

Describe the modes of disease transmission (direct, food, water, vectors, body fluids)

Explain how pathogen persistence, transmission mechanism, immunization rate and people mobility affect the spread of disease.

Explain this graph →

How do host cells recognise self vs non-self?

Describe the inflammatory response.

The zone of _____ is used to calculate how effective an antimicrobial agent is.

Distinguish between infectious and non-infectious disease.

Describe what prostaglandins do in inflammation.

T cells recognize the difference between _____ and _____ as they detect abnormal antigens. For example, they deal with cancer or transplanted organs.

Two cells that naïve B cells can become:

Contrast an antigen and an antibody.

Distinguish between the innate and adaptive immune response.

In the adaptive immune response, distinguish between a humoral and a cell-mediated response.

What is 'self'?

What is 'non-self'?

What is complement?

Difference between active and passive immunity, both naturally and artificially acquired. Give examples for each..

Name some physical defences of humans.

Name two chemical defence strategies of plants.

Chemical produced by WBC to signal other WBC to an area.

Protein that B cells produce.

Cells that the adaptive immune system relies on.

