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QUESTION 00

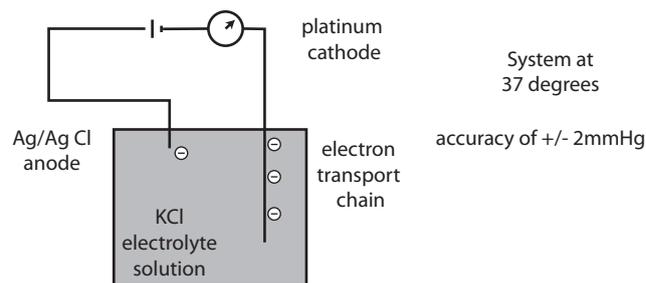
Describe how the partial pressure of oxygen in a blood sample is measured using a Clark electrode.

Partial pressure

is the pressure that a gas would exert if it occupied the space alone (Dalton's Law)  
normal oxygen partial pressure in an arterial sample is 95mmHg

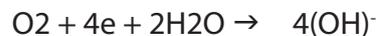
Clark electrode

also known as the polarographic electrode



at the anode silver reacts with KCl to create electrons

basically the platinum cathode sets up an electron transport chain like in the mitochondria



the more oxygen the more electrons that can be taken up and therefore the greater the current  
protein deposits would render the cathode ineffective if it was inserted into blood  
a plastic membrane is therefore set up which is permeable to O<sub>2</sub> and the same set up is used

Calibration

is via standardised gas mixtures

Limitations

O<sub>2</sub> electrode must be clean and free from contamination  
blood sample must be recent, anaerobic and heparinised  
plastic membrane must be intact