

Lecture 5: ECG (Part 1)

(Quiz)

0. Review

1. ECG Intro

2. Basic Heart Physiology

3. ECG Leads

- PreLab 2 due at lab session

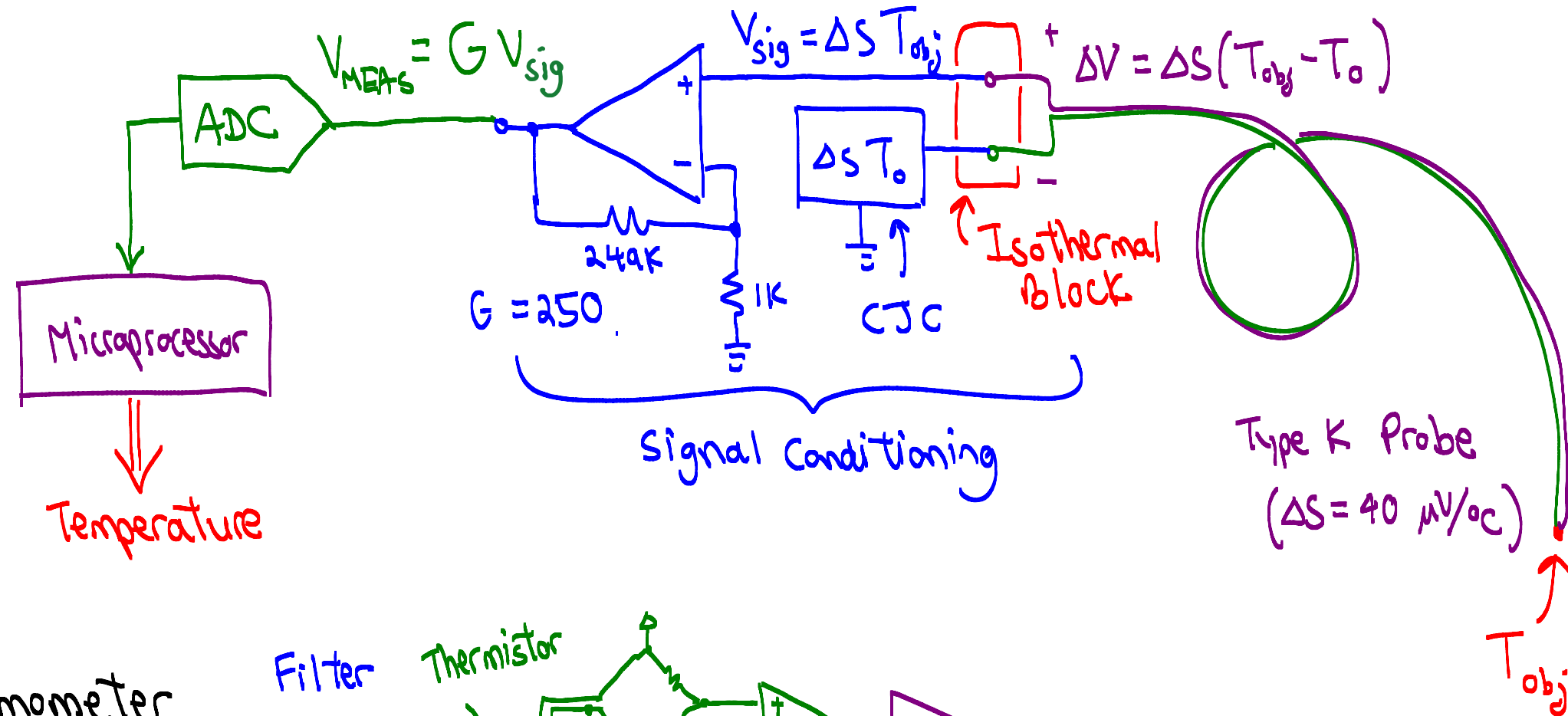
- HW2 due this Thu (Jan 23)

- Lab 1 report due Fri (Jan 24)

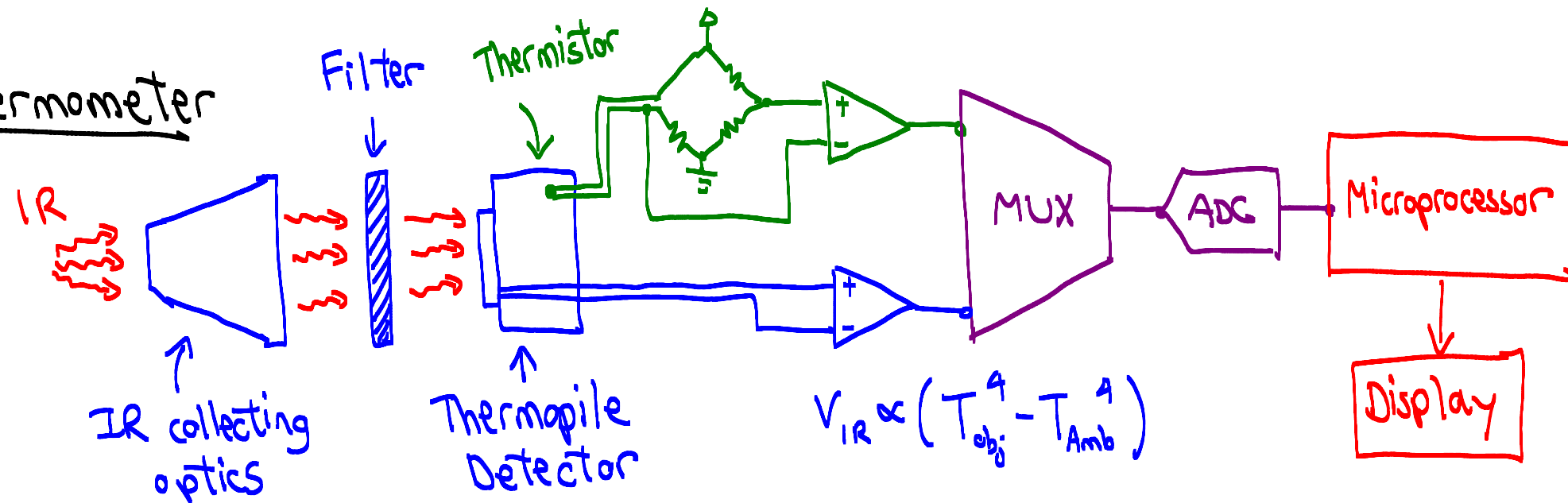
↳ see course website
for template

0. Review

① Thermocouple



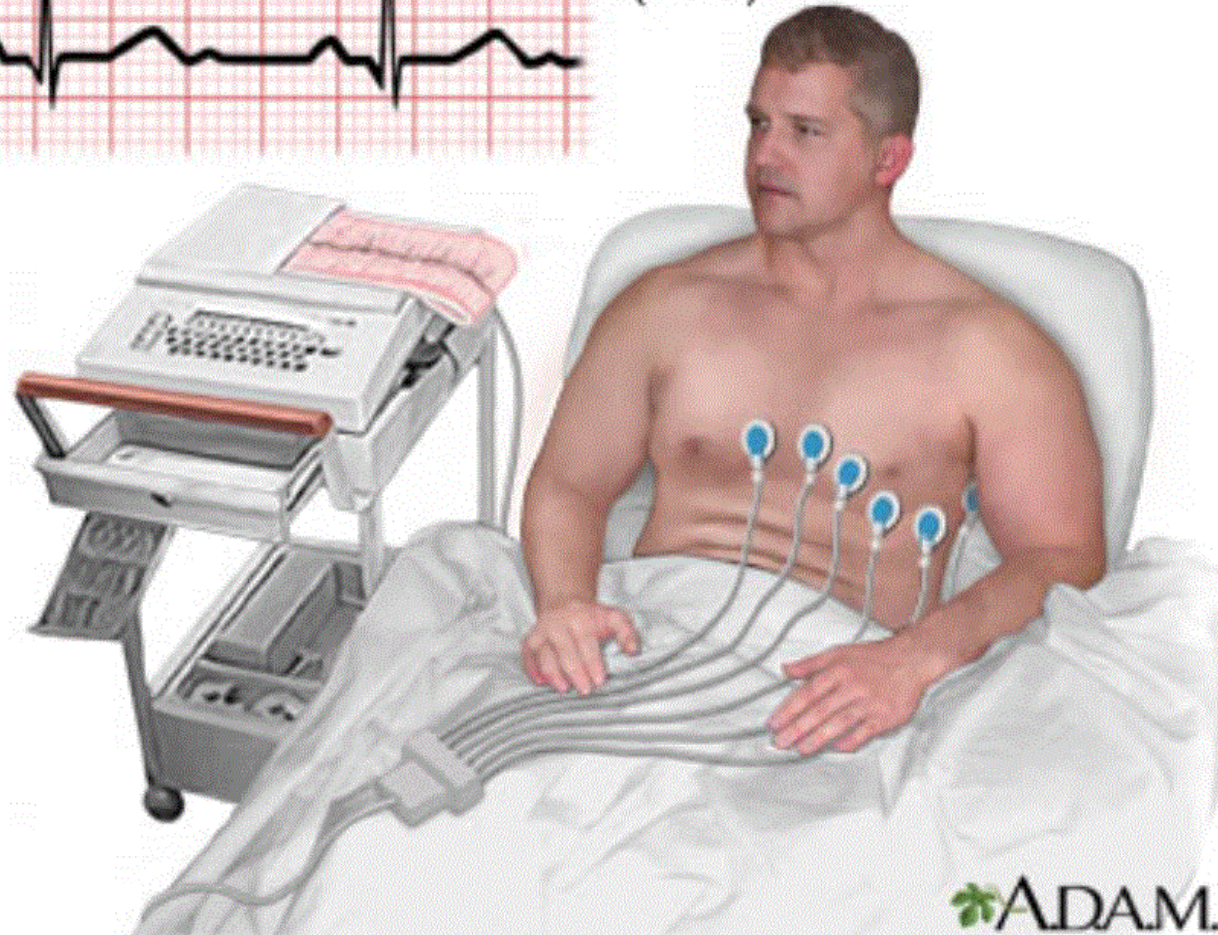
② Infrared Thermometer



1. ECG Intro

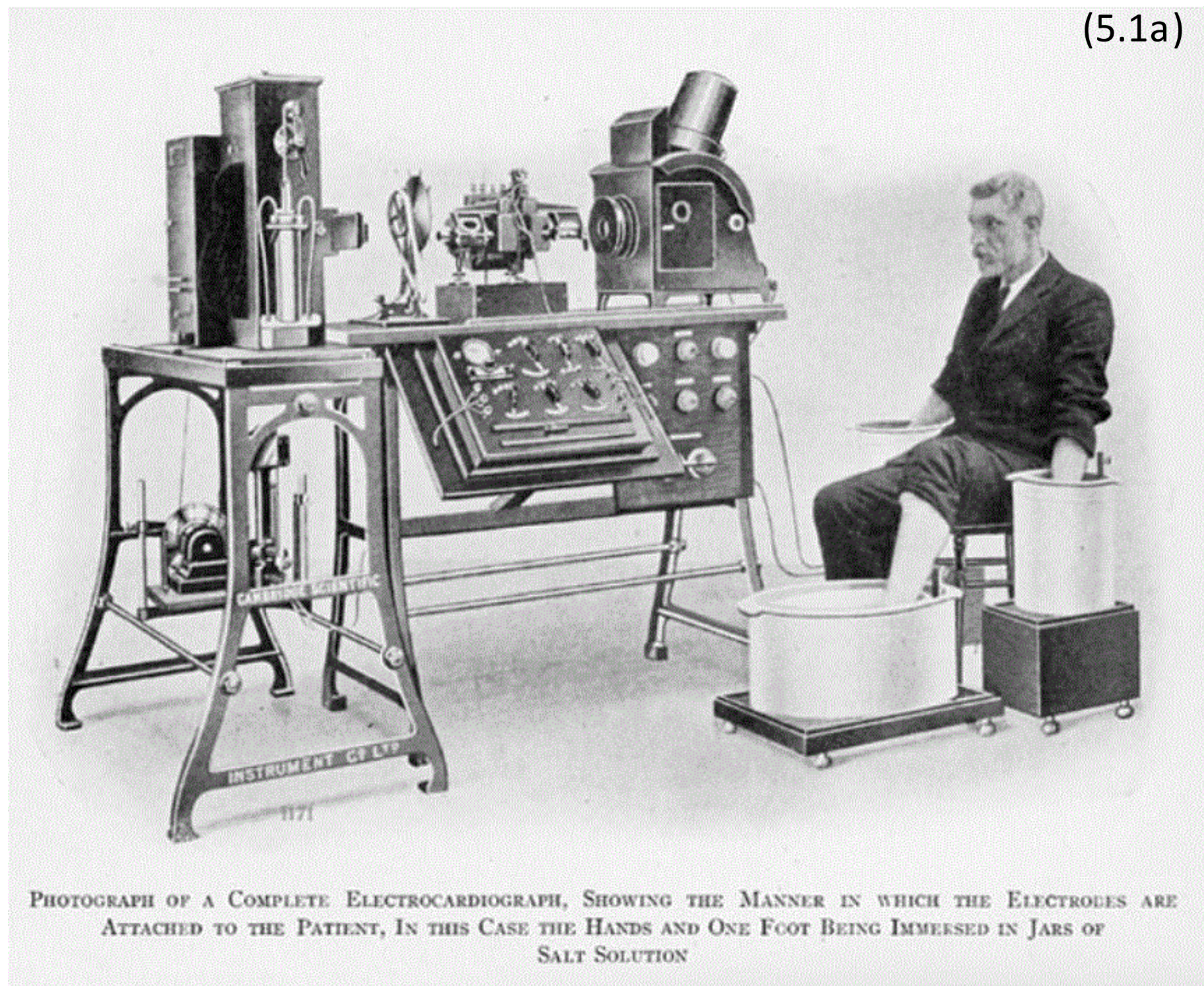


Electrocardiogram (ECG)



nlm.nih.gov

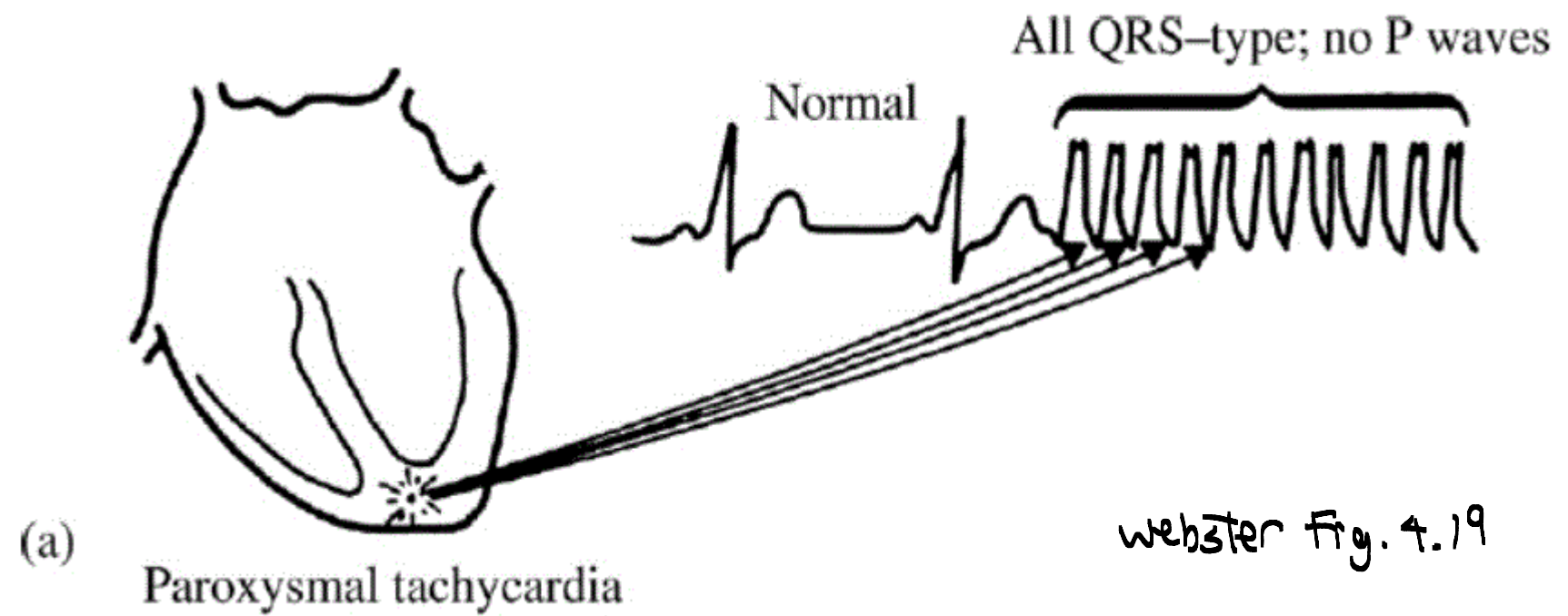
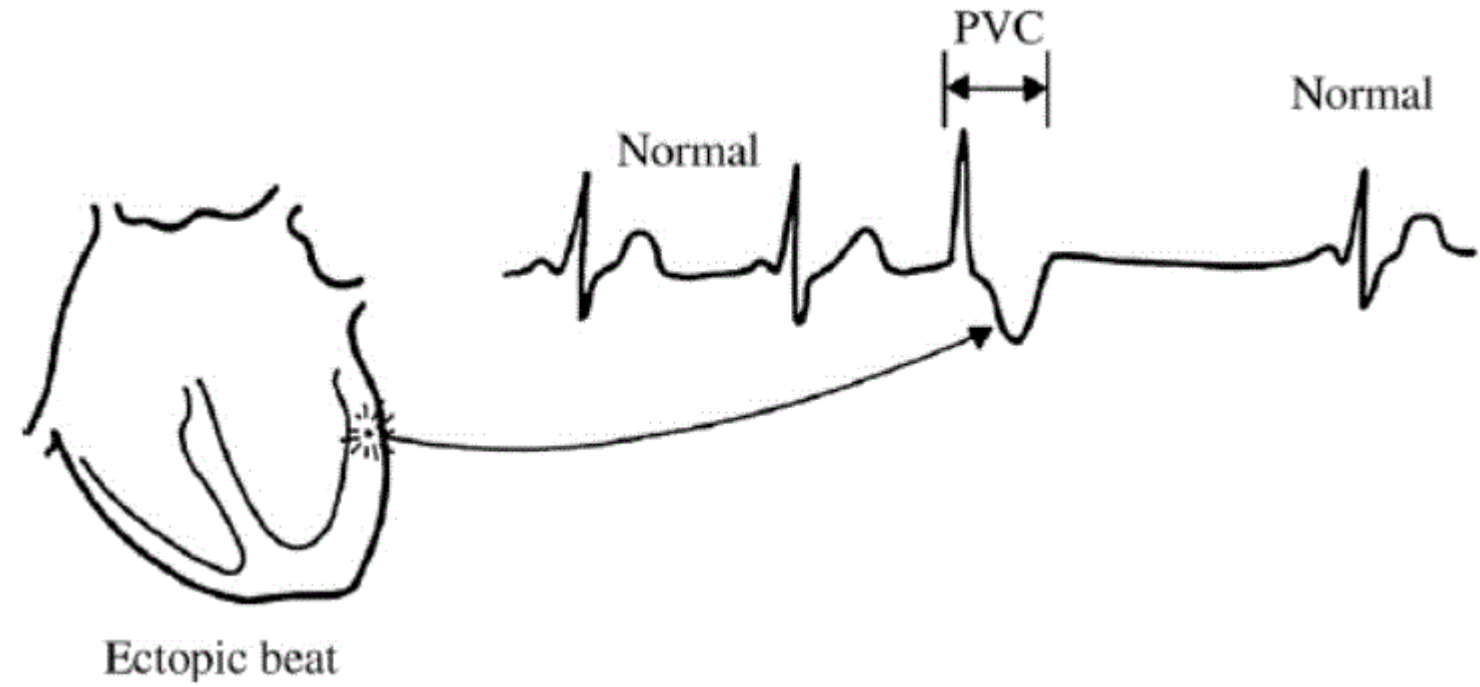
(5.1a)



dax2.wordpress.com

- Why is ECG useful?

Ex:

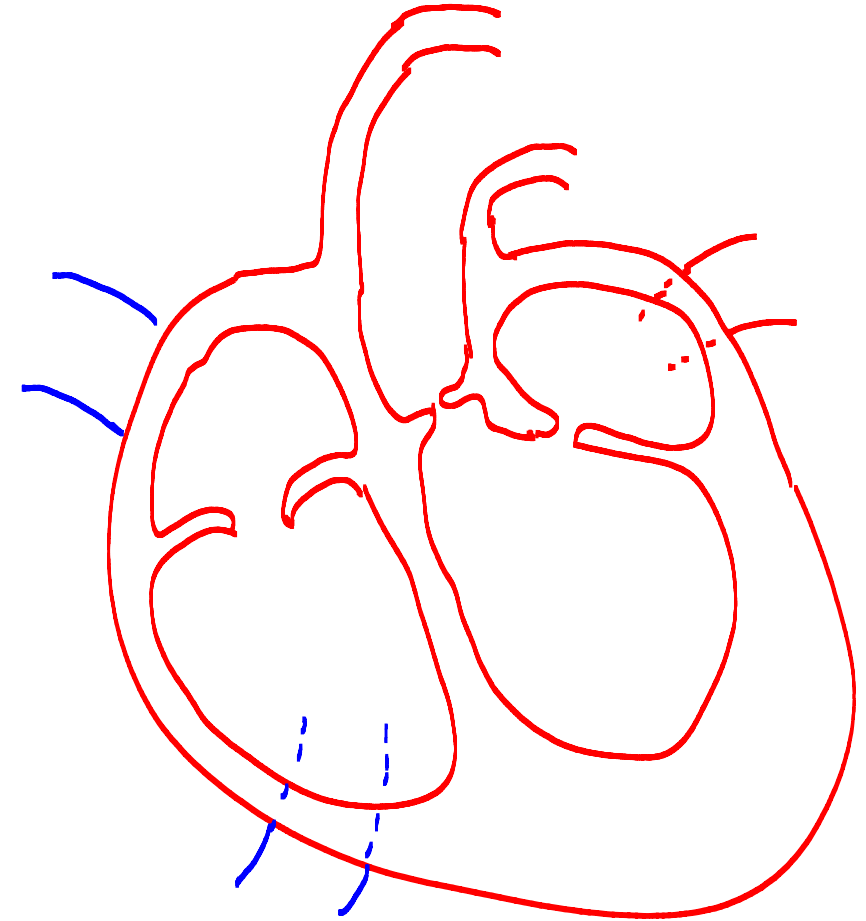
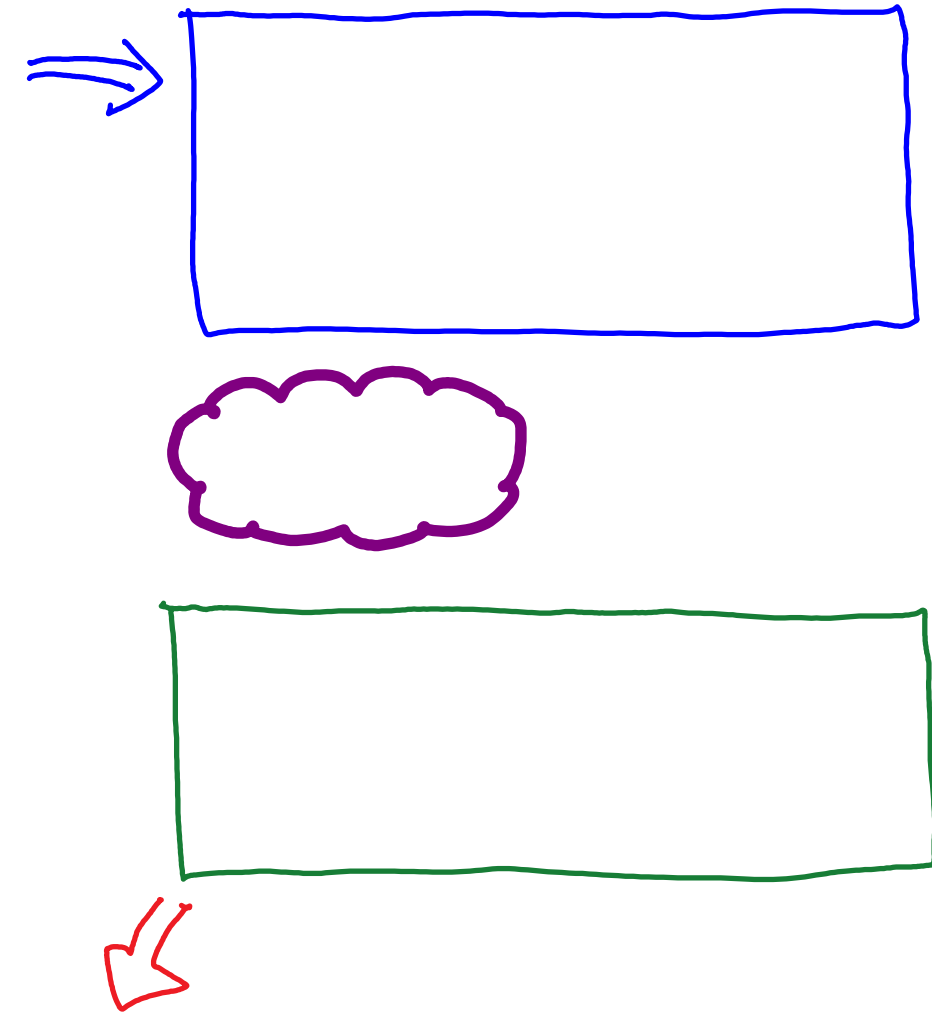


webster fig. 4.19

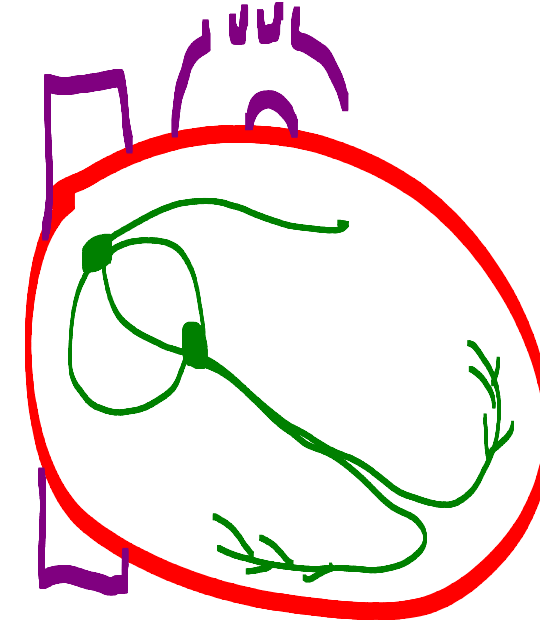
2. Basics of Heart Physiology

(5.2)

- Cardiac Cycle



★ The heart is essentially an electromechanical device!



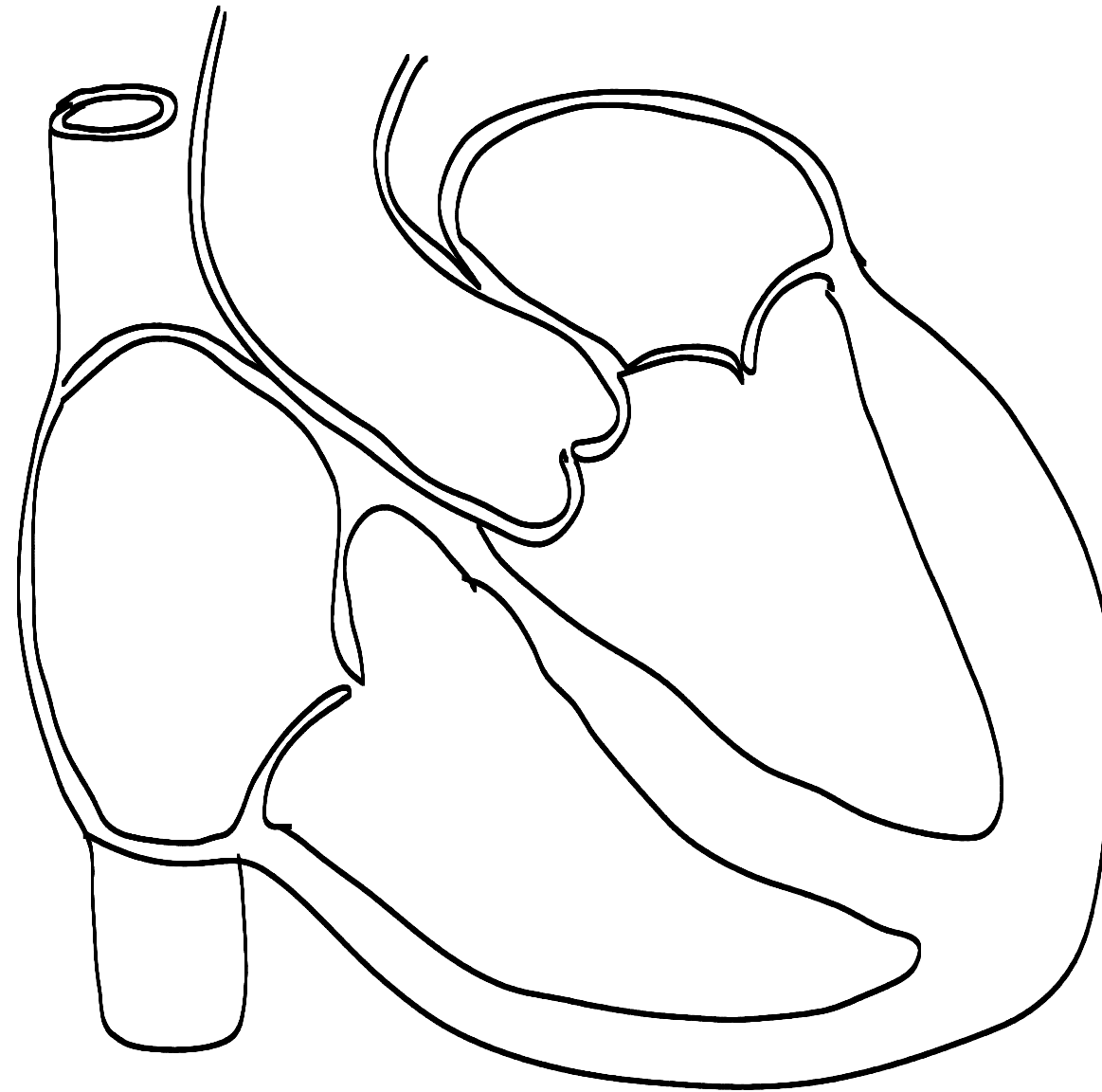
- Electrical Network of the Heart

①

②

③

④

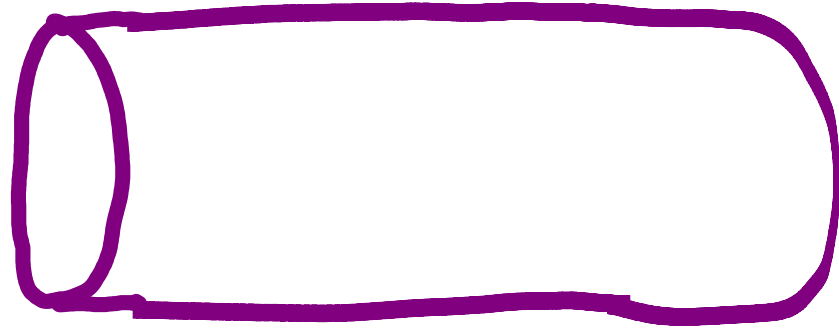


⑤

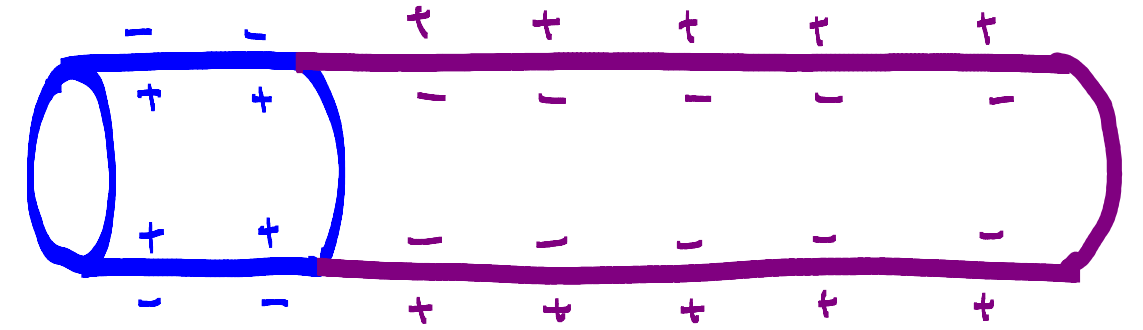
(5.4)

• Action Potential (AP):

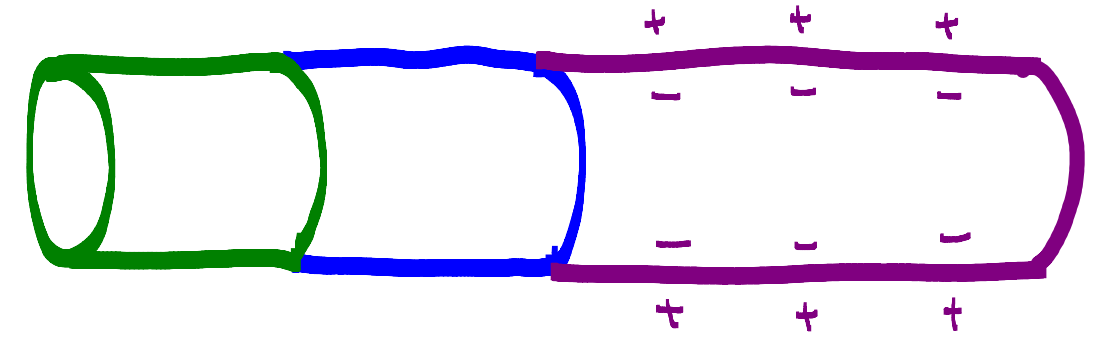
① Nerve



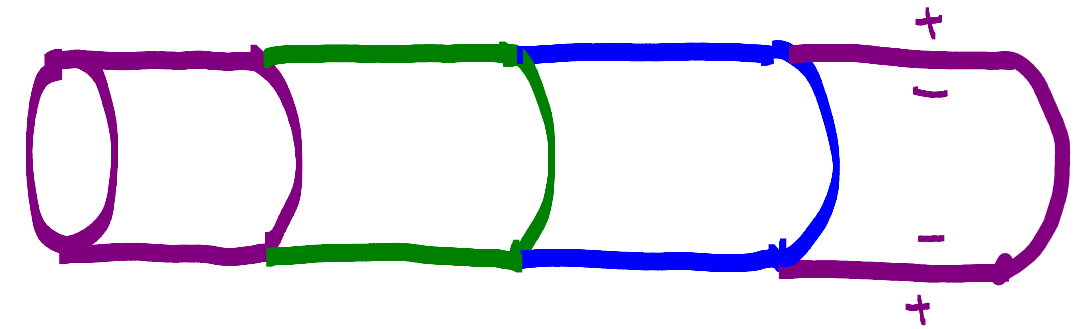
①



②

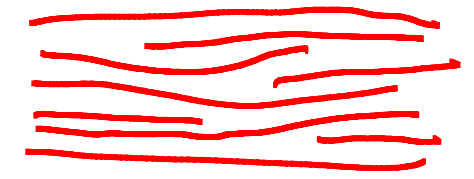


③

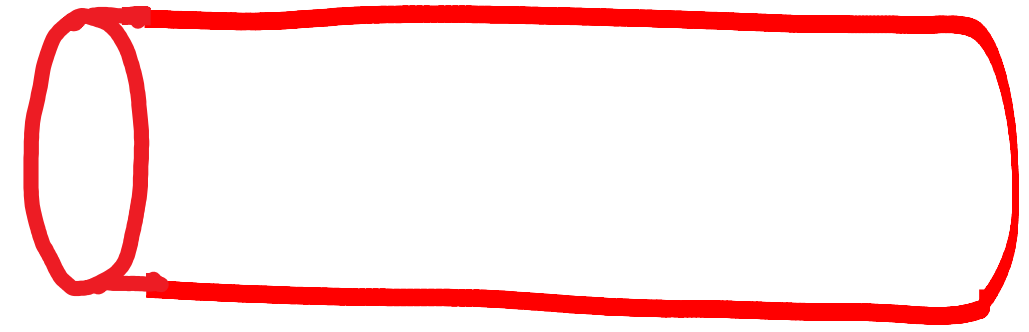


② Muscle

①



②

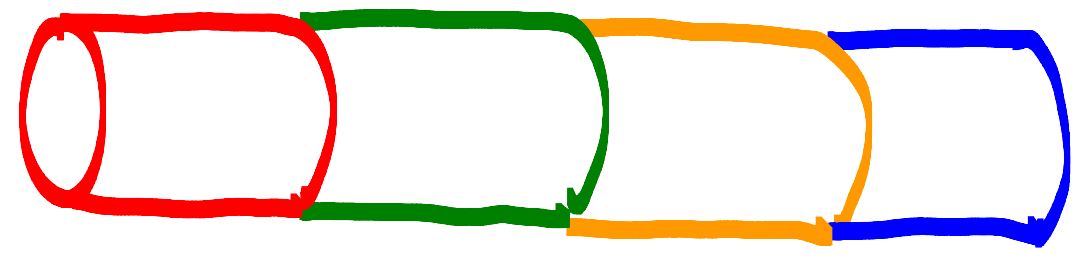
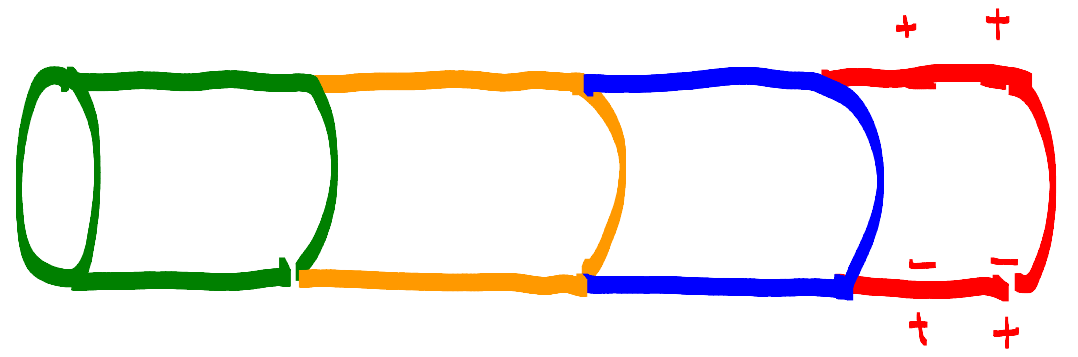
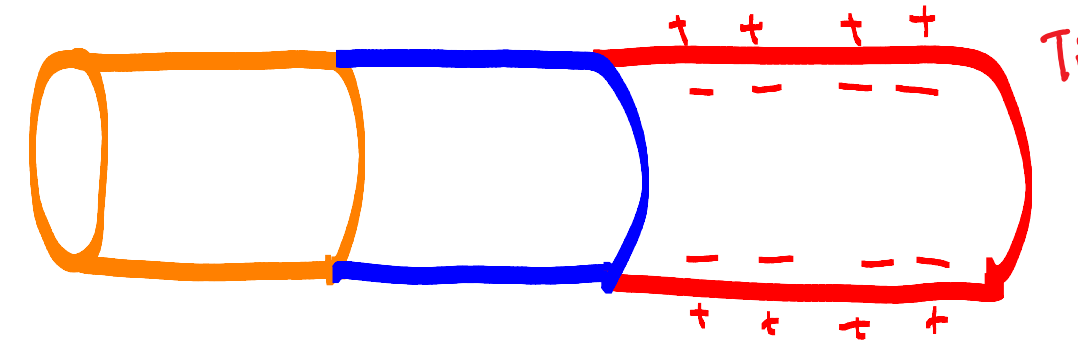
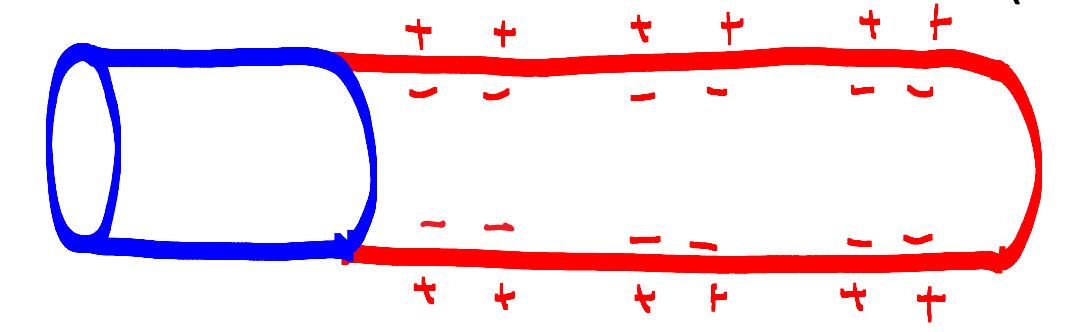


①

③

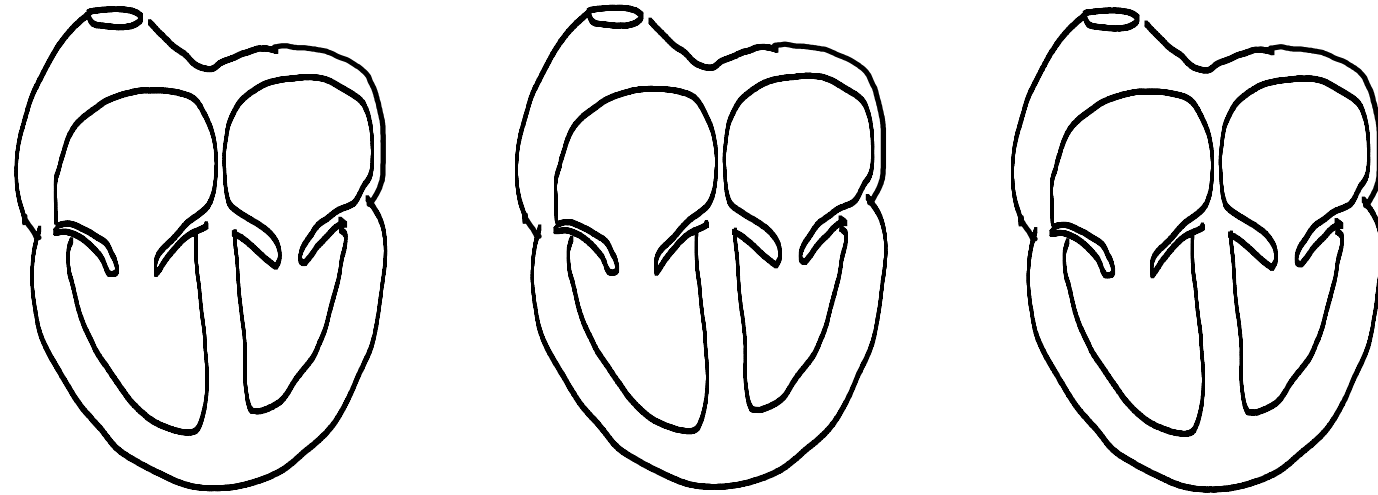
④

(5.6)



Time

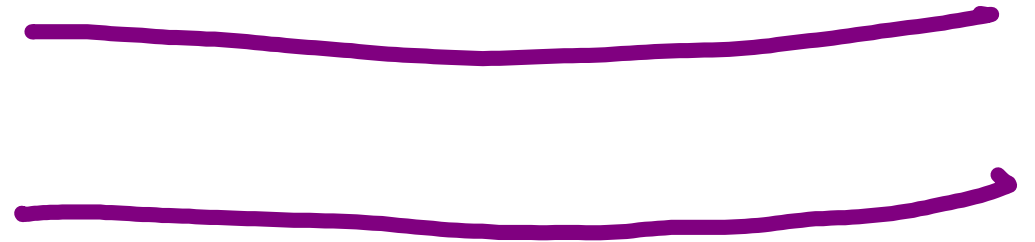
- ECG waveform



(5.7)

NOTE:

In CNS and PNS,



- Body Surface Potential

ECG does not directly measure the heart

Heart can be modeled as an _____

