

A. Give the cardiac output (CO) formula, the average amount of blood involved, and the percent (%) distribution to the following selected organs:

Formula:  $CO =$  \_\_\_\_\_ Amount of body blood: \_\_\_\_\_

% distribution for : Cardiac Muscle \_\_\_\_\_ GI \_\_\_\_\_ Kidneys \_\_\_\_\_ Brain \_\_\_\_\_ Sk. Muscle \_\_\_\_\_

B. Define EKG (ECG); Draw a normal lead II EKG, label the waveforms seen and explain their meaning.

C. Name the parts of the cardiac conduction system, their location, and give their rate of discharge (depolarization)

D. Explain how both of the ANS divisions regulate the heart by

a. Source or origin of the ANS neurons that supply the heart

b. Specific Innervation sites on the heart

c. Neurotransmitters used and their receptors

d. Specific heart effects for each ANS division

E. Draw with labels the complete detailed structure of an intercalated disc.

F. Name the layers of the heart wall and describe (or draw with labels) their *histological* structure

G. Name the four heart valves, give their location, and relate their function to blood flow and heart sounds heard in the cardiac cycle.

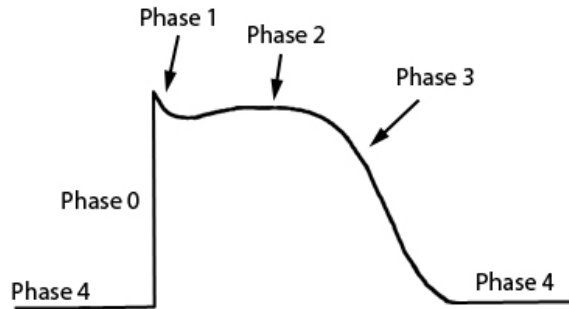
H. Completely and accurately define the following terms related to the cardiac cycle and heart function:

- a. diastole \_\_\_\_\_
- b. systole \_\_\_\_\_
- c. isovolumetric \_\_\_\_\_
- d. chronotropic \_\_\_\_\_
- e. dromotropic \_\_\_\_\_
- f. inotropic \_\_\_\_\_
- g. calsequestrin \_\_\_\_\_

I. Explain what causes the following heart sounds

- a. S1 \_\_\_\_\_
- b. S2 \_\_\_\_\_
- c. S3 \_\_\_\_\_
- d. S4 \_\_\_\_\_

J. Label the following electrical graph for cardiac muscle using the **ions** involved during all phases:



K. Name two fetal bypass structures related to the circulatory system and what they are bypassing.

- a. \_\_\_\_\_
- b. \_\_\_\_\_

L. Regarding endocrine controls

- a. Name a hormone from the heart and its effects \_\_\_\_\_
- b. Name three hormones that target the heart and their effects
  - i \_\_\_\_\_
  - ii \_\_\_\_\_
  - iii \_\_\_\_\_

M. Name four different problems of the heart related to these etiological areas/structures

- a. myocardium \_\_\_\_\_
- b. valves \_\_\_\_\_
- c. blood vessels \_\_\_\_\_
- d. congenital \_\_\_\_\_