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Lab Time/Date _____

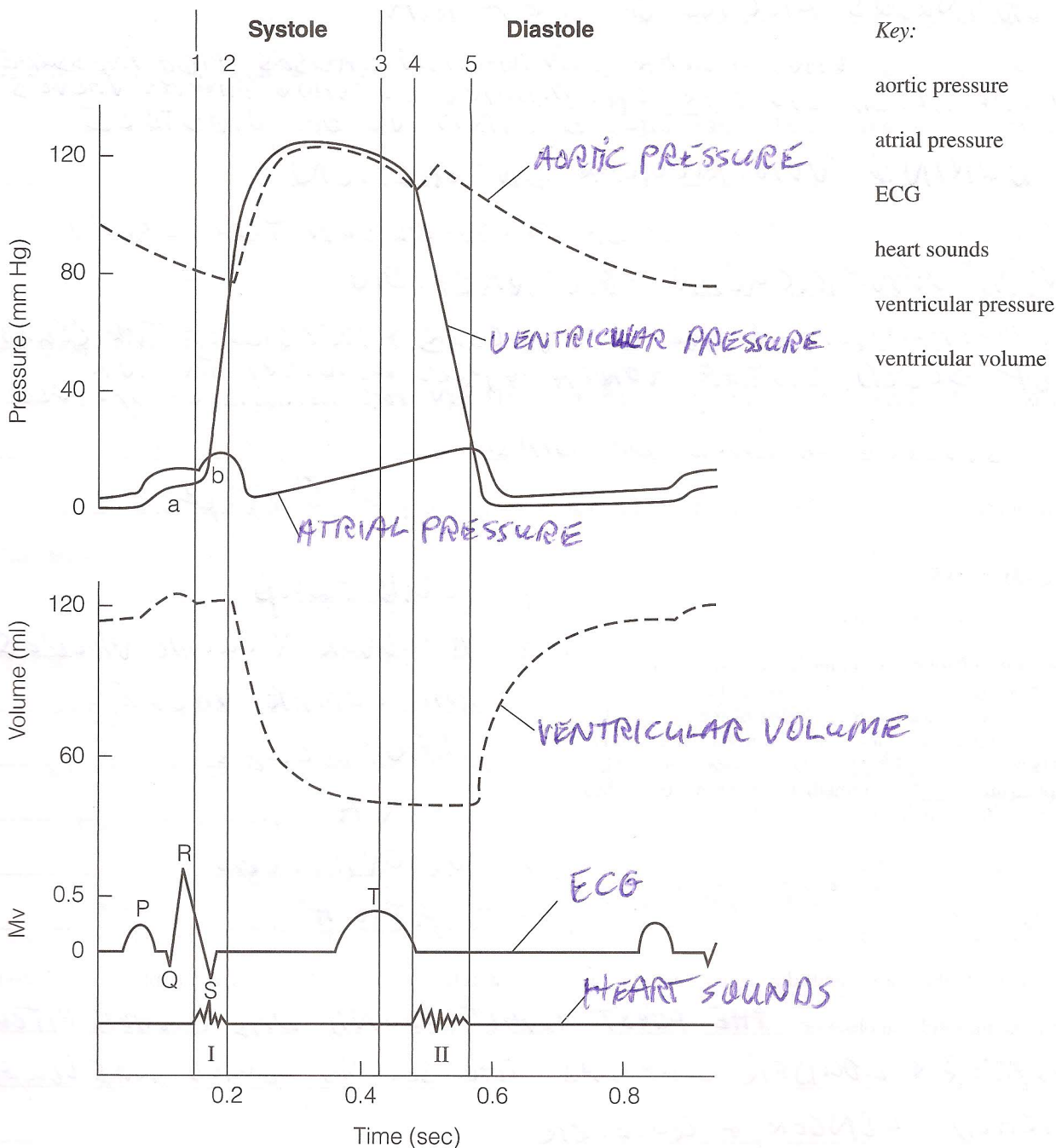
EXERCISE 22

REVIEW SHEET

Human Cardiovascular Physiology—Blood Pressure and Pulse Determinations

Cardiac Cycle

1. Correctly identify valve closings and openings, chamber pressures, volume lines, and the ECG and heart sound scan lines on the diagram below by using the terms from the list to the right of the diagram.



2. Define the following terms:

systole: VENTRICULAR CONTRACTION

diastole: VENTRICULAR RELAXATION

cardiac cycle: THE COMPLETE CYCLE OF CONTRACTION + RELAXATION OF THE HEART BEAT

3. Answer the following questions concerning events of the cardiac cycle:

When are the AV valves closed? DURING SYSTOLE

Open? DURING DIASTOLE

What event within the heart causes the AV valves to open? RELAXATION OF THE VENTRICLES + CONTINUOUS FILLING OF THE ATRIA

What causes them to close? VENTRICULAR CONTRACTION CAUSES HIGH PRESSURE IN THE BLOOD IN THE CHAMBERS CLOSING THE AV VALVES

When are the semilunar valves closed? AT THE BEGINNING OF DIASTOLE

Open? DURING VENTRICULAR CONTRACTION

What event causes the semilunar valves to open? HIGH PRESSURE IN THE BLOOD FROM VENTRICULAR CONTRACTION

To close? RELAXATION OF THE VENTRICLES + RECOIL OF THE COLUMNS OF BLOOD IN THE AORTA + PULMONARY TRUNK

At what point in the cardiac cycle is the pressure in the heart highest? IN THE MIDDLE OF SYSTOLE

Lowest? IN THE MIDDLE OF DIASTOLE

4. If an individual's heart rate is 80 beats/min, what is the length of the cardiac cycle? 0.75 sec

Heart Sounds

5. Complete the following statements:

The monosyllables describing the heart sounds are 1.
 The first heart sound is a result of closure of the 2 valves, whereas the second is a result of closure of the 3 valves.
 The heart chambers that have just been filled when you hear the first heart sound are the 4, and the chambers that have just emptied are the 5. Immediately after the second heart sound, the 6 are filling with blood, and the 7 are empty.

1. LUB - DUP
2. ATRIOVENTRICULAR VALVES
3. SEMILUNAR VALVES
4. VENTRICLES
5. ATRIA
6. VENTRICLES
7. ATRIA

6. As you listened to the heart sounds during the laboratory session, what differences in pitch, length, and amplitude (loudness) of the two sounds did you observe? THE FIRST HEART SOUND WAS HIGHER PITCHED SHORTER + LOUDER WHEREAS THE SECOND SOUND WAS LOWER PITCHED, LONGER, + QUIETER

7. No one expects you to be a full-fledged physician on such short notice, but on the basis of what you have learned about heart sounds, how might abnormal sounds be used to diagnose heart problems? (Use your textbook as necessary.)
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-
-

The Pulse

8. Define pulse: ALTERNATING SURGES OF PRESSURE IN AN ARTERY DURING VENTRICULAR CONTRACTIONS + RELAXATIONS

9. Identify the artery palpated at each of the following pressure points:

| | | | |
|---------------------|-----------------|----------------------------|-------------------------|
| at the wrist | <u>RADIAL</u> | on the dorsum of the foot | <u>DORSALIS PEDIS</u> |
| in front of the ear | <u>TEMPORAL</u> | at the side of the neck | <u>COMMON CAROTID</u> |
| in the groin | <u>FEMORAL</u> | above the medial malleolus | <u>POSTERIOR TIBIAL</u> |

10. How would you tell by simple observation whether bleeding is arterial or venous? ARTERIAL BLEEDING WOULD BE RAPID + SPURTING, VENOUS SLOWER + NOT SPURTING

Blood Pressure Determinations

11. Define blood pressure: PRESSURE IMPARTED TO THE BLOOD BY LEFT VENTRICLE TO GET IT TO FLOW THROUGHOUT THE BODY

12. Identify the phase of the cardiac cycle to which each of the following apply:

systolic pressure SYSTOLE diastolic pressure DIASTOLE

13. What is the name of the instrument used to compress the artery and record pressures in the auscultatory method of determining blood pressure? SPHYGMOMANOMETER

14. What are sounds of Korotkoff? SOUNDS MADE BY THE BLOOD SPURTING IN ARTERY AS THE PRESSURE IS RELEASED IN THE CUFF

What causes the systolic sound? PRESSURE IN CUFF DROPS JUST LOWER THAN SYSTOLIC PRESSURE ALLOWING SOME SPURTING FLOW

The disappearance of sound? PRESSURE IN CUFF LESS THAN DIASTOLIC PRESSURE AND NO MORE DISTURBANCE OF FLOW

15. Interpret 145/85. 145 mmHg SYSTOLIC, 85 mmHg DIASTOLIC
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16. In Exercise 21, you learned about the relative positions of veins and arteries. Based on this knowledge, how would you expect venous pressures to compare to arterial pressures?

THEY SHOULD BE MUCH LOWER

Why? PRESSURE IN ARTERIES IS DISSIPATED AS BLOOD GOES THROUGH CAPILLARIES DISSIPATED

Observing the Effect of Various Factors on Blood Pressure and Heart Rate

17. What effect do the following have on blood pressure? (Indicate increase by I and decrease by D.)

D 1. increased diameter of the arterioles

D 4. hemorrhage

I 2. increased blood viscosity

I 5. arteriosclerosis

I 3. increased cardiac output

I 6. increased pulse rate

18. In which position (sitting, reclining, or standing) is the blood pressure normally the highest?

STANDING

The lowest? RECLINING

What immediate changes in blood pressure did you observe when the subject stood up after being in the sitting or reclining position? INCREASE IN SYSTOLIC + DIASTOLIC PRESSURE

What changes in the blood vessels might account for the change? CONSTRICTION OF THE ARTERIOLES

After the subject stood for 3 minutes, what changes in blood pressure were observed? SYSTOLIC PRESSURE WENT DOWN DIASTOLIC PRESSURE STAYED HIGHER

How do you account for this change? PRESSURE NEED LESS INCREASE IN HR + SKELETAL MUS. CONTRACTION HELPS RETURN VASOCONSTRICTION OF ARTERIOLES HELPS RETURN

19. What was the effect of exercise on blood pressure? INCREASES IT

On pulse? INCREASES IT Do you think these effects reflect changes in cardiac output or in peripheral resistance?

REFLECTS BOTH -> NEED HIGHER CO BECAUSE OF EXERCISE CAUSED DECREASE IN TPR

Skin Color as an Indicator of Local Circulatory Dynamics

20. Describe normal skin color and the appearance of the veins in the subject's forearm before any testing was conducted.

REDDISH SKIN COLOR, VEINS BLUISH

21. What changes occurred when the subject emptied the forearm of blood (by raising the arm and making a fist) and the flow was blocked with the cuff?

VEINS LOST COLOR + SKIN TURNED WHITE