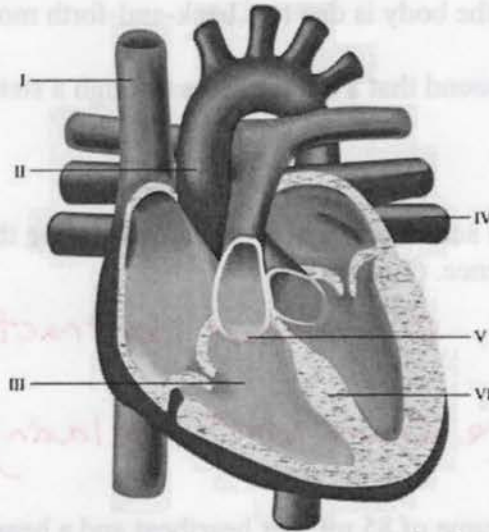




S30 Unit A: Biology – Circulatory System Assignment

Name: Key!
Date: May 1st 2014

The Human Heart



100%
32

1. Match the following parts of the heart. Place your answers in the blanks provided. (0.5 marks each)

- II - aorta
- IV - pulmonary vein
- V - valve
- III - right ventricle
- VI - septum
- I - vena cava

2. Match each function with the appropriate structures listed. Place your answer in the blanks provided. (0.5 marks each)

- e - collects deoxygenated blood from the body
 - a - maintains the proper direction of the blood through the heart
 - d - receives oxygenated blood from the lungs
 - c - sends deoxygenated blood to the lungs
 - b - sends oxygenated blood to the body
 - f - separates left and right sides of the heart
- a. any heart valve
 - b. aorta
 - c. pulmonary artery
 - d. pulmonary vein
 - e. vena cava
 - f. septum

1/22/2014

3. Decide whether each statement is true (T) or false (F). Place your answer in the blank space given. (0.5 marks each)

F All arteries carry oxygenated blood and all veins carry deoxygenated blood.

T The heart rate increases as a person who was initially at rest starts exercising.

F The flow of blood in the body is due to a back-and-forth motion caused by tidal forces.

T The "lub-dub" heart sound that a doctor hears through a stethoscope comes from the heart valves.

4. There is a difference in the action of the heart chambers during the processes of systole and diastole. Describe this difference. (1 mark)

Systole → comes from heart contracting.

Diastole → come from heart relaxing

5. An athlete has a stroke volume of 85 mL per heartbeat and a heart rate of 64 beats per minute. Calculate, in litres, the volume of blood pumped over one year. (2 marks)

$$\frac{85 \text{ mL} \times 64 \text{ beats}}{1 \text{ min}} \times \frac{60 \text{ min}}{1 \text{ h}} \times \frac{24 \text{ h}}{1 \text{ day}} \times \frac{365.25 \text{ days}}{1 \text{ year}} = 2.9 \times 10^9 \text{ mL}$$

or $2.9 \times 10^6 \text{ L}$

6. Starting from the aorta, write the pathway that blood takes through the circulatory system. (2 marks)

Aorta, arteries, arterioles, capillaries, venules, veins, vena cava, ~~lungs~~, heart, lungs, heart, Aorta.

7. Describe the differences in blood pressure in the arteries, veins, arterioles, venules and capillaries. (2 marks)

Blood pressure decreases as you

move from arteries to arterioles to capillaries. It increases slightly in

the venules & in the veins.

8. A typical blood pressure is 120/80. Describe

a) What the two numbers above mean. (1 mark)

120 → systole → pressure during heart contraction
 80 → diastole → pressure during heart relaxation.

b) What the units of measurement for the numbers are. (1 mark)

mmHg (millimetres of Mercury)

c) A cause of high blood pressure. (1 mark)

- stress
- poor diet
- hereditary causes
- smoking / drug use

9. Describe the role of the valves in leg veins. (1 mark)

Keep blood from flowing back ^{down} to the feet as the muscles in the legs force blood ^{upwards}

10. Complete the following table. (0.5 marks per space)

Blood Component	Percentage of Blood Volume	Colour	Description
red blood cells	40%-45%	red	carry oxygen through the body
plasma	55% - 60%	yellow / colourless	fluid that suspends other cells.
white blood cells	~1%	colourless	part of immune system
platelets	trace amounts	colourless	cause blood clotting.

Interchangeable

18

11. Explain why a rough, cracked coating of plaque on the interior wall of arteries can cause blood clots to form. (1 mark)

As platelets hit sharp corners, they burst and release hormones that cause fibrinogen to turn into fibrin and close the "cut". This causes a clot.

12. Define LDL and HDL. Include foods that can increase levels of each. (4 marks)

LDL → "bad cholesterol" → results in build-up of plaque.
→ red meat, dairy

HDL → "good cholesterol" → lowers plaque build-up and LDL levels.
→ fish, flax, olive oil

13. Define the following cardiovascular disorders or diseases. (1 mark each)

a) Atherosclerosis - hardening / blockage of arteries due to plaque.

b) Heart Disease - death of heart cells due to lack of oxygen → blocked arteries

c) Stroke - lack of blood & oxygen to the brain.

d) Heart Attack - dysfunction of heart tissues due to cell death.

Bonus Questions: Answer Only ONE!!!

Fair Bonus Question: Why do the Inuit people have low incidence of heart disease despite a traditional diet made up of 50% animal fat.

Unfair Bonus Question: How many grams of cholesterol are in your favorite fast food item?

- the fat is mostly HDL

~~Chicken wings~~

chocolate

→

milk →

2mg / 100mL