

Date \_\_\_\_\_

Name \_\_\_\_\_ Student No. \_\_\_\_\_

Teacher \_\_\_\_\_ School \_\_\_\_\_



## Biology 12

### Section Assignment 3.3

Remember to submit the following with this assignment:

Title	From	Marks
Part A: Anatomy of the Heart	3.3A	24
Part B: Regulating the Heartbeat	3.3B	18
Part C: Blood Pressure—Hypertension and Hypotension	3.3C	12

### Section Assignment 3.3 Part A

#### Anatomy of the Heart

Select the best answers for the following questions. (2 marks each)

1. The path followed by blood on one circuit through the heart is:
  - A. ventricle, atrioventricular valve, semilunar valve, atrium
  - ~~B. atrium, atrioventricular valve, ventricle semilunar valve~~
  - C. atrium, ventricle, atrioventricular valve, semilunar valve
  - D. atrium, semilunar valve, ventricle, atrioventricular valve
2. Which chamber of the heart pumps oxygenated blood into the aorta?
  - A. left atrium
  - B. right atrium
  - C. left ventricle
  - D. right ventricle
3. How many heart valves would a blood cell travelling from the renal vein to the pulmonary vein pass through?
  - A. none
  - B. one
  - C. two
  - D. four
4. The chordae tendineae:
  - A. give support to the septum
  - B. open the semilunar valves
  - C. open the atrioventricular valves
  - D. prevent valves in the heart from inverting
5. The chordae tendineae help to prevent the backflow of blood from the:
  - A. atria to the ventricles
  - B. ventricles into the atria
  - C. ventricles into the aorta and pulmonary trunk
  - D. aorta and pulmonary trunk into the ventricles

6. Which valve opens when the heart chamber producing the highest blood pressure contracts?
  - A. the aortic semilunar valve
  - B. the pulmonary semilunar valve
  - C. the left atrioventricular valve
  - D. the right atrioventricular valve

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7. Through how many heart valves must a blood cell pass as it moves from the brain to the lungs?
  - A. 2
  - B. 4
  - C. 6
  - D. 8
8. Immediately after leaving the right ventricle, which structure does blood flow through?
  - A. the aorta
  - B. the AV valve
  - C. the pulmonary vein
  - D. the pulmonary trunk
9. Which of the following describes the location and function of valves found in the circulatory system?
  - A. found in capillary beds and regulate the diameter of venules
  - B. found in blood vessels that have low blood pressure and prevent backflow of blood in the heart
  - C. found in blood vessels where blood is moving fastest and control blood entering the capillary beds
  - D. found in blood vessels carrying blood away from the heart and limit high blood pressure in tissues

10. What heart structure prevents the AV valves from inverting?

- A. SA node
- B. AV node
- C. Purkinje fibres
- D. chordae tendineae

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11. Contraction of which heart chamber forces blood into the aorta?

- A. left atrium
- B. right atrium
- C. left ventricle
- D. right ventricle

12. What is the last heart chamber that blood passes through on its way to the systemic system?

- A. left atrium
- B. right atrium
- C. left ventricle
- D. right ventricle

**Marks**

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### Section Assignment 3.3 Part B

#### Regulating the Heartbeat

Select the best answers for the following questions. (2 marks each)

1. The sequence of structures through which the nerve impulse passes to cause contraction of the heart is:

A. AV node - SA node - Purkinje fibres  
B. Purkinje fibres - AV node - SA node  
C. Purkinje fibres - SA node - AV node  
D. SA node - AV node - Purkinje fibres

2. Use these events to answer the following question.

In which order do the following events occur during one heartbeat (the cardiac cycle)?

1. systole of the ventricles  
2. opening of the atrioventricular valves  
3. electrical impulses sent from the SA node  
4. atria fill with blood

A. 2,1,3,4  
B. 2,3,4,1  
C. 4,1,3,2  
D. 4,3,2,1

3. The coordinating structure responsible for an intrinsic heart beat is the:

A. cerebellum  
B. sinoatrial node  
C. chordae tendineae  
D. sympathetic nervous system

4. The atrioventricular (AV) node stimulates the:

A. aorta  
B. Purkinje fibres  
C. sinoatrial (SA) node  
D. atrioventricular (AV) valves

5. An irregular heartbeat, in which the contraction of the atria does not always result in contraction of the ventricles, likely indicates a problem with the:
- A. SA node
  - B. AV node
  - C. AV valve
  - D. semilunar valve
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6. What happens during atrial diastole?
- A. atria fill with blood
  - B. semilunar valves close
  - C. ventricles fill with blood
  - D. atrioventricular valves open
7. What would result if the SA node received increased stimulation by the sympathetic nervous system?
- A. heart rate and blood pressure would decrease
  - B. mesenteric arteries and arterioles would dilate
  - C. blood pressure and blood velocity would increase
  - D. production of red blood cells and platelets would increase
8. Which heart structure is not functioning properly if an electrical device is needed to stimulate the atria to contract?
- A. septum
  - B. SA node
  - C. AV node
  - D. chordae tendineae
9. What is the function of the Purkinje fibres?
- A. to cause atrial contraction
  - B. to act as a pacemaker and initiate the heartbeat
  - C. to prevent the valves from inverting during the heartbeat
  - D. to conduct impulses from the AV node to the ventricles

**Marks**

### Section Assignment 3.3 Part C

## Blood Pressure—Hypertension and Hypotension

Select the best answers for the following questions. (2 marks each)

1. The highest blood pressure in the aorta occurs when the:
  - A. atria contract
  - B. heart muscle is relaxed
  - C. blood is pushed into the ventricle
  - D. blood is pumped from the heart
2. High blood pressure can be the result of:
  - A. decreased blood volume
  - B. increased sodium absorption
  - C. decreased aldosterone release
  - D. increased opening of capillary beds
3. Blood pressure will be greatest when:
  - A. atria relax
  - B. atria contracts
  - C. ventricles relax
  - D. ventricles contract
4. Which of the following is normal resting systolic blood pressure for an adult?
  - A. 50 mm Hg
  - B. 80 mm Hg
  - C. 120 mm Hg
  - D. 180 mm Hg
5. An increase in which of the following would cause hypotension?
  - A. heart rate
  - B. cardiac output
  - C. arteriole dilation
  - D. reabsorption of water by the kidneys

6. Blood pressure is greatest in which of the vessels?

- A. posterior vena cava
- B. anterior vena cava
- C. aorta
- D. pulmonary artery

**Marks**

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