

1. (1.0 point)

Approximately one third of the heart lies to the left of the midline of the sternum. The remaining two thirds lie to the right of the sternum.

- a. True
- *b. False

Correct Answer Reply:

Approximately two thirds of the heart lie to the left of the midline of the sternum. The remaining third lies to the right of the sternum.

Incorrect Answer Reply:

Approximately two thirds of the heart lie to the left of the midline of the sternum. The remaining third lies to the right of the sternum.

2. (1.0 point)

Depolarization is the same as contraction.

- a. True
- *b. False

Correct Answer Reply:

Depolarization is *not* the same as contraction. Depolarization (an electrical event) is expected to result in contraction (a mechanical event). It is possible to see organized electrical activity on the cardiac monitor, yet evaluation of the patient reveals no palpable pulse. This clinical situation is called pulseless electrical activity (PEA).

Incorrect Answer Reply:

Depolarization is *not* the same as contraction. Depolarization (an electrical event) is expected to result in contraction (a mechanical event). It is possible to see organized electrical activity on the cardiac monitor, yet evaluation of the patient reveals no palpable pulse. This clinical situation is called pulseless electrical activity (PEA).

3. (1.0 point)

The base, or lower portion, of the heart is formed by the tip of the left ventricle.

- a. True
- *b. False

Correct Answer Reply:

The base of the heart is its upper portion and is formed mainly by the left atrium, with a small amount of right atrium. It lies at approximately the level of the second intercostal space, immediately in front of the esophagus and descending aorta. The heart's apex, or lower portion, is formed by the tip of the left ventricle. The apex lies just above the diaphragm at approximately the level of the fifth intercostal space in the midclavicular line.

Incorrect Answer Reply:

The base of the heart is its upper portion and is formed mainly by the left atrium, with a small amount of right atrium. It lies at approximately the level of the second intercostal space, immediately in front of the esophagus and descending aorta. The heart's apex, or lower portion, is formed by the tip of the left ventricle. The apex lies just above the diaphragm at approximately the level of the fifth intercostal space in the midclavicular line.

4. (1.0 point)

The period of time during the cardiac cycle when cells cannot respond to a stimulus, no matter how strong, is called the relative refractory period.

- a. True
- *b. False

Correct Answer Reply:

During the absolute refractory period (also known as the effective refractory period), the cell will not respond to further stimulation. This means that the myocardial working cells cannot contract and the cells of the electrical conduction system cannot conduct an electrical impulse—no matter how strong the stimulus.

Incorrect Answer Reply:

During the absolute refractory period (also known as the effective refractory period), the cell will not respond to further stimulation. This means that the myocardial working cells cannot contract and the cells of the electrical conduction system cannot conduct an electrical impulse—no matter how strong the stimulus.

5. (1.0 point)

Blood pressure is the result of cardiac output and peripheral vascular resistance.

- *a. True
- b. False

Correct Answer Reply:

Blood pressure is equal to cardiac output $\times$ peripheral vascular resistance. Blood pressure is the force exerted by the circulating blood volume on the walls of the arteries. Peripheral vascular resistance is the resistance to the flow of blood determined by blood vessel diameter and the tone of the vascular musculature.

Incorrect Answer Reply:

Blood pressure is equal to cardiac output $\times$ peripheral vascular resistance. Blood pressure is the force exerted by the circulating blood volume on the walls of the arteries. Peripheral vascular resistance is the resistance to the flow of blood determined by blood vessel diameter and the tone of the vascular musculature.

6. (1.0 point)

The heart is divided into _____ chambers but functions as a _____-sided pump.

- a. 2; 4
- b. 3; 2
- *c. 4; 2
- d. 4; 3

Correct Answer Reply:

The heart has four chambers – two atria and two ventricles. The right and left sides of the heart are separated by an internal wall of connective tissue called a septum. The interatrial septum separates the right and left atria. The interventricular septum separates the right and left ventricles. The septa separate the heart into two functional pumps. The right atrium and right ventricle make up one pump. The left atrium and left ventricle make up the other.

Incorrect Answer Reply:

The heart has four chambers – two atria and two ventricles. The right and left sides of the heart are separated by an internal wall of connective tissue called a septum. The interatrial septum separates the right and left atria. The interventricular septum separates the right and left ventricles. The septa separate the heart into two functional pumps. The right atrium and right ventricle make up one pump. The left atrium and left ventricle make up the other.

7. (1.0 point)

In the heart's conduction system, the _____ receive(s) an electrical impulse from the right and left bundle branches and relay(s) it to the ventricular myocardium.

- a. atrial pacemaker cells
- *b. Purkinje fibers
- c. atrioventricular (AV) node
- d. sinoatrial (SA) node

Correct Answer Reply:

The right and left bundle branches divide into smaller and smaller branches and then into a special network of fibers called the Purkinje fibers. These fibers spread from the interventricular septum into the papillary muscles. They continue downward to the apex of the heart, making up an elaborate web that penetrates about one third of the way into the ventricular muscle mass. The fibers then become continuous with the muscle cells of the right and left ventricles.

Incorrect Answer Reply:

The right and left bundle branches divide into smaller and smaller branches and then into a special network of fibers called the Purkinje fibers. These fibers spread from the interventricular septum into the papillary muscles. They continue downward to the apex of the heart, making up an elaborate web that penetrates about one third of the way into the ventricular muscle mass. The fibers then become continuous with the muscle cells of the right and left ventricles.

8. (1.0 point)

Blood flows from the left atrium through the _____ valve into the left ventricle.

- *a. mitral
- b. aortic
- c. pulmonic
- d. tricuspid

Correct Answer Reply:

Blood flows from the left atrium through the mitral (bicuspid) valve into the left ventricle.

Incorrect Answer Reply:

Blood flows from the left atrium through the mitral (bicuspid) valve into the left ventricle.

9. (1.0 point)

The anterior surface of the heart consists primarily of the:

- a. left atrium.
- b. right atrium.
- c. left ventricle.
- *d. right ventricle.

Correct Answer Reply:

The front (anterior) surface of the heart lies behind the sternum and costal cartilages. It is formed by portions of the right atrium and the left and right ventricles. However, because the heart is tilted slightly toward the left in the chest, the right ventricle is the area of the heart that lies most directly behind the sternum.

Incorrect Answer Reply:

The front (anterior) surface of the heart lies behind the sternum and costal cartilages. It is formed by portions of the right atrium and the left and right ventricles. However, because the heart is tilted slightly toward the left in the chest, the right ventricle is the area of the heart that lies most directly behind the sternum.

10. (1.0 point)

The intrinsic rate of the atrioventricular (AV) junction is:

- a. 20 to 40 beats/min.
- *b. 40 to 60 beats/min.
- c. 60 to 80 beats/min.
- d. 80 to 100 beats/min.

Correct Answer Reply:

The AV junction has pacemaker cells capable of firing at a rate of 40 to 60 beats/min.

Incorrect Answer Reply:

The AV junction has pacemaker cells capable of firing at a rate of 40 to 60 beats/min.

11. (1.0 point)

The base of the heart is found at approximately the level of the:

- a. first rib.
- *b. second rib.
- c. fourth rib.
- d. fifth and sixth ribs.

Correct Answer Reply:

The base of the heart is its upper portion and is formed mainly by the left atrium, with a small amount of right atrium. It lies at approximately the level of the second rib, immediately in front of the esophagus and descending aorta.

Incorrect Answer Reply:

The base of the heart is its upper portion and is formed mainly by the left atrium, with a small amount of right atrium. It lies at approximately the level of the second rib, immediately in front of the esophagus and descending aorta.

12. (1.0 point)

Thin strands of fibrous connective tissue extend from the AV valves to the papillary muscles and prevent the AV valves from bulging back into the atria during ventricular systole. These strands are called:

- a. cardiac cilia.
- b. Purkinje fibers.
- c. papillary muscles.
- *d. chordae tendineae.

Correct Answer Reply:

Chordae tendineae are thin strands of connective tissue. On one end, they are attached to the underside of the AV valves. On the other end, they are attached to small mounds of myocardium called papillary muscles. Papillary muscles project inward from the lower portion of the ventricular walls. When the ventricles contract and relax, so do the papillary muscles. The papillary muscles adjust their tension on the chordae tendineae, preventing them from bulging too far into the atria.

Incorrect Answer Reply:

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13. (1.0 point)

The myocardium is thickest in the:

- a. right atrium.
- b. right ventricle.
- c. left atrium.
- *d. left ventricle.

Correct Answer Reply:

The thickness of the myocardium varies from one heart chamber to another. This variation in thickness is related to the amount of resistance that must be overcome to pump blood out of the different chambers. For example, the atria encounter little resistance when pumping blood to the ventricles. As a result, the atria have a thin myocardial layer. On the other hand, the ventricles must pump blood to either the lungs (the right ventricle) or the rest of the body (the left ventricle). So, the ventricles have a much thicker myocardial layer than the atria. The wall of the left ventricle is three times thicker than that of the right because the left ventricle propels blood to most vessels of the body. The right ventricle moves blood only through the blood vessels of the lungs and then into the left atrium.

Incorrect Answer Reply:

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14. (1.0 point)

An internal wall of connective tissue called the _____ separates the right and left ventricles.

- a. septae
- *b. interventricular septum
- c. coronary sinus
- d. mediastinum

Correct Answer Reply:

The right and left sides of the heart are separated by an internal wall of connective tissue called a septum. The interatrial septum separates the right and left atria. The interventricular septum separates the right and left ventricles. The septa separate the heart into two functional pumps. The right atrium and right ventricle make up one pump. The left atrium and left ventricle make up the other.

Incorrect Answer Reply:

The right and left sides of the heart are separated by an internal wall of connective tissue called a septum. The interatrial septum separates the right and left atria. The interventricular septum separates the right and left ventricles. The septa separate the heart into two functional pumps. The right atrium and right ventricle make up one pump. The left atrium and left ventricle make up the other.

15. (1.0 point)

The left atrium receives blood from the:

- *a. pulmonary veins.
- b. aorta.
- c. pulmonary arteries.
- d. inferior vena cava.

Correct Answer Reply:

The left atrium receives freshly oxygenated blood from the lungs via the right and left pulmonary veins.

Incorrect Answer Reply:

The left atrium receives freshly oxygenated blood from the lungs via the right and left pulmonary veins.

16. (1.0 point)

The tricuspid valve lies between the:

- *a. right atrium and right ventricle.
- b. left atrium and left ventricle.
- c. right ventricle and pulmonary artery.
- d. left ventricle and aorta.

Correct Answer Reply:

The tricuspid valve is the atrioventricular valve that lies between the right atrium and right ventricle. It consists of three separate cusps or flaps.

Incorrect Answer Reply:

The tricuspid valve is the atrioventricular valve that lies between the right atrium and right ventricle. It consists of three separate cusps or flaps.

17. (1.0 point)

The _____ is a double-walled sac that encloses the heart and helps protect it from trauma and infection.

- a. myocardium
- *b. pericardium
- c. endocardium
- d. subendocardium

Correct Answer Reply:

The pericardium is a double-walled sac that encloses the heart and helps protect it from trauma and infection. The rough outer layer

of the pericardial sac is called the fibrous parietal pericardium. It anchors the heart to some of the structures around it, such as the sternum and diaphragm, by means of ligaments. This helps prevent excessive movement of the heart in the chest with changes in body position. The inner layer, the serous pericardium, consists of two layers: parietal and visceral. The parietal layer lines the inside of the fibrous pericardium. The visceral layer (also called the epicardium) adheres to the outside of the heart and forms the outer layer of the heart muscle.

Incorrect Answer Reply:

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18. (1.0 point)

The normal pacemaker of the heart is the _____, which is found in the _____.

- a. SA node; left atrium
- b. AV node; right atrium
- *c. SA node; right atrium
- d. AV node; left atrium

Correct Answer Reply:

The SA node is normally the primary pacemaker of the heart because it has the fastest firing rate of all of the heart's normal pacemaker sites. It is located in the upper posterior part of the right atrium where the superior vena cava and the right atrium meet.

Incorrect Answer Reply:

The SA node is normally the primary pacemaker of the heart because it has the fastest firing rate of all of the heart's normal pacemaker sites. It is located in the upper posterior part of the right atrium where the superior vena cava and the right atrium meet.

19. (1.0 point)

Which of the following circles around the left side of the heart and is embedded in the epicardium on the back of the heart?

- a. Left anterior descending coronary artery
- *b. Circumflex coronary artery
- c. Left main coronary artery
- d. Right coronary artery

Correct Answer Reply:

The circumflex coronary artery circles around the left side of the heart. It is embedded in the epicardium on the back of the heart. The circumflex supplies blood to the left atrium, lateral surface of the left ventricle, inferior surface of the left ventricle in about 15% of individuals, posterior surface of the left ventricle in 15%, SA node in about 40%, and the AV node in 10% to 15%.

Incorrect Answer Reply:

The circumflex coronary artery circles around the left side of the heart. It is embedded in the epicardium on the back of the heart. The circumflex supplies blood to the left atrium, lateral surface of the left ventricle, inferior surface of the left ventricle in about 15% of individuals, posterior surface of the left ventricle in 15%, SA node in about 40%, and the AV node in 10% to 15%.

20. (1.0 point)

Blood flows from the right atrium through the _____ valve into the right ventricle.

- a. mitral
- b. aortic
- c. pulmonic
- *d. tricuspid

Correct Answer Reply:

Blood flows from the right atrium through the tricuspid valve into the right ventricle.

Incorrect Answer Reply:

Blood flows from the right atrium through the tricuspid valve into the right ventricle.

21. (1.0 point)

In most patients, the SA and AV nodes are supplied by the _____ coronary artery.

- *a. right
- b. left main
- c. circumflex
- d. left anterior descending

Correct Answer Reply:

The SA node receives its blood supply from the SA node artery that runs lengthwise through the center of the node. The SA node artery originates from the right coronary artery in about 60% of people. The AV node is supplied by the right coronary artery in 85% to 90% of the population. In the remainder, the circumflex artery provides the blood supply.

Incorrect Answer Reply:

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population. In the remainder, the circumflex artery provides the blood supply.

22. (1.0 point)

Which side of the heart is a low-pressure system that pumps venous blood to the lungs?

- a. Left
- *b. Right

Correct Answer Reply:

The job of the right side of the heart is to pump unoxygenated blood to and through the lungs to the left side of the heart. This is called the pulmonary circulation. The right side of the heart is a low-pressure system.

Incorrect Answer Reply:

The job of the right side of the heart is to pump unoxygenated blood to and through the lungs to the left side of the heart. This is called the pulmonary circulation. The right side of the heart is a low-pressure system.

23. (1.0 point)

In the heart's conduction system, the _____ receive(s) an electrical impulse from the bundle of His and relay(s) it to the Purkinje fibers in the ventricular myocardium.

- a. AV node
- b. AV junction
- c. SA node
- *d. right and left bundle branches

Correct Answer Reply:

The right bundle branch innervates the right ventricle. The left bundle branch spreads the electrical impulse to the interventricular septum and left ventricle.

Incorrect Answer Reply:

The right bundle branch innervates the right ventricle. The left bundle branch spreads the electrical impulse to the interventricular septum and left ventricle.

24. (1.0 point)

The right atrium receives venous blood from the head and upper extremities via the _____, from the lower body via the _____, and from the heart via the _____.

- a. coronary sinus; superior vena cava; inferior vena cava
- b. superior vena cava; coronary sinus; inferior vena cava
- c. inferior vena cava; superior vena cava; coronary sinus
- *d. superior vena cava; inferior vena cava; coronary sinus

Correct Answer Reply:

The right atrium receives blood low in oxygen from:

- The superior vena cava, which carries blood from the head and upper extremities
- The inferior vena cava, which carries blood from the lower body
- The coronary sinus, which is the largest vein that drains the heart

Incorrect Answer Reply:

The right atrium receives blood low in oxygen from:

- The superior vena cava, which carries blood from the head and upper extremities
- The inferior vena cava, which carries blood from the lower body
- The coronary sinus, which is the largest vein that drains the heart

25. (1.0 point)

Movement of blood from the left ventricle through the body is called the:

- *a. systemic circulation.
- b. pulmonary circulation.

Correct Answer Reply:

The left side of the heart is a high-pressure pump. The job of the left heart is to receive oxygenated blood and pump it out to the rest of the body. This is called the systemic circulation.

Incorrect Answer Reply:

The left side of the heart is a high-pressure pump. The job of the left heart is to receive oxygenated blood and pump it out to the rest of the body. This is called the systemic circulation.

26. (1.0 point)

The intrinsic rate of the SA node is:

- a. 40 to 60 beats/min.
- *b. 60 to 100 beats/min.
- c. 100 to 180 beats/min.
- d. 200 to 260 beats/min.

Correct Answer Reply:

The intrinsic rate of the SA node is 60 to 100 beats/min.

Incorrect Answer Reply:

The intrinsic rate of the SA node is 60 to 100 beats/min.

27. (1.0 point)

Blood leaves the left ventricle through the _____ valve to the aorta and its branches and is distributed throughout the body.

- a. mitral
- *b. aortic
- c. pulmonic

d. tricuspid

Correct Answer Reply:

When the left ventricle contracts, freshly oxygenated blood flows through the aortic valve into the aorta and out to the body.

Incorrect Answer Reply:

When the left ventricle contracts, freshly oxygenated blood flows through the aortic valve into the aorta and out to the body.

28. (1.0 point)

The thick, muscular middle layer of the heart wall that contains the atrial and ventricular muscle fibers necessary for contraction is the:

- a. epicardium.
- b. pericardium.
- *c. myocardium.
- d. endocardium.

Correct Answer Reply:

The myocardium (middle layer) is a thick, muscular layer that consists of cardiac muscle fibers (cells) responsible for the pumping action of the heart.

Incorrect Answer Reply:

The myocardium (middle layer) is a thick, muscular layer that consists of cardiac muscle fibers (cells) responsible for the pumping action of the heart.

29. (1.0 point)

Which of the following are semilunar (SL) valves?

- *a. Aortic and pulmonic
- b. Aortic and tricuspid
- c. Pulmonic and mitral
- d. Tricuspid and mitral

Correct Answer Reply:

The pulmonic and aortic valves are SL valves. The SL valves prevent backflow of blood from the aorta and pulmonary arteries into the ventricles.

Incorrect Answer Reply:

The pulmonic and aortic valves are SL valves. The SL valves prevent backflow of blood from the aorta and pulmonary arteries into the ventricles.

30. (1.0 point)

The right ventricle expels blood through the _____ valve into the pulmonary trunk.

- a. mitral
- b. aortic

- *c. pulmonic
- d. tricuspid

Correct Answer Reply:

The right ventricle expels the blood through the pulmonic valve into the pulmonary trunk. The pulmonary trunk divides into a right and left pulmonary artery, each of which carries blood to one lung (pulmonary circuit).

Incorrect Answer Reply:

The right ventricle expels the blood through the pulmonic valve into the pulmonary trunk. The pulmonary trunk divides into a right and left pulmonary artery, each of which carries blood to one lung (pulmonary circuit).

31. (1.0 point)

The intrinsic rate of the Purkinje fibers is

- *a. 20 to 40 beats/min.
- b. 40 to 60 beats/min.
- c. 60 to 100 beats/min.
- d. 100 to 180 beats/min.

Correct Answer Reply:

The Purkinje fibers have pacemaker cells capable of firing at a rate of 20 to 40 beats/min.

Incorrect Answer Reply:

The Purkinje fibers have pacemaker cells capable of firing at a rate of 20 to 40 beats/min.

32. (1.0 point)

_____ cells are working cells of the heart that contain contractile filaments and form the muscular layer of the atrial walls and the thicker muscular layer of the ventricular walls.

- a. Pacemaker
- *b. Myocardial
- c. Specialized
- d. Electrical

Correct Answer Reply:

Myocardial cells (working or mechanical cells) contain contractile filaments. When these cells are electrically stimulated, the contractile filaments slide together and the myocardial cell contracts.

Incorrect Answer Reply:

Myocardial cells (working or mechanical cells) contain contractile filaments. When these cells are electrically stimulated, the contractile filaments slide together and the myocardial cell contracts.

33. (1.0 point)

When the cardiac muscle cell is stimulated, the cell is said to:

- a. polarize.
- b. recover.
- *c. depolarize.
- d. repolarize.

Correct Answer Reply:

The movement of charged particles across a cell membrane causing the inside of the cell to become positive is called depolarization. Depolarization must take place before the heart can mechanically contract and pump blood.

Incorrect Answer Reply:

The movement of charged particles across a cell membrane causing the inside of the cell to become positive is called depolarization. Depolarization must take place before the heart can mechanically contract and pump blood.

34. (1.0 point)

_____ is the period during which a heart chamber is contracting and blood is being ejected.

Correct Answer(s):

- a. Systole

Correct Answer Reply:

Systole is the period during which a heart chamber is contracting and blood is being ejected.

Incorrect Answer Reply:

Systole is the period during which a heart chamber is contracting and blood is being ejected.

35. (1.0 point)

The coronary arteries originate at the base of the _____.

Correct Answer(s):

- a. aorta

Correct Answer Reply:

The coronary arteries originate at the base of the aorta.

Incorrect Answer Reply:

The coronary arteries originate at the base of the aorta.

36. (1.0 point)

The right atrium receives deoxygenated blood from the _____ (which carries blood from the head and upper extremities), the _____ (which carries blood

from the lower body), and the _____ (which receives blood from the intracardiac circulation).

Correct Answer(s):

a. superior vena cava, inferior vena cava, coronary sinus

Correct Answer Reply:

The right atrium receives deoxygenated blood from the superior vena cava (which carries blood from the head and upper extremities), the inferior vena cava (which carries blood from the lower body), and the coronary sinus (which receives blood from the intracardiac circulation).

Incorrect Answer Reply:

The right atrium receives deoxygenated blood from the superior vena cava (which carries blood from the head and upper extremities), the inferior vena cava (which carries blood from the lower body), and the coronary sinus (which receives blood from the intracardiac circulation).

37. (1.0 point)

_____ is the period of relaxation during which a heart chamber is filling.

Correct Answer(s):

a. Diastole

Correct Answer Reply:

Diastole is the period of relaxation during which a heart chamber is filling.

Incorrect Answer Reply:

Diastole is the period of relaxation during which a heart chamber is filling.

38. (1.0 point)

The _____ refractory period corresponds with the downslope of the T wave.

Correct Answer:

The relative refractory period (also known as the vulnerable period) corresponds with the downslope of the T wave.

39. (1.0 point)

What are the two phases of the cardiac cycle?

Correct Answer:

The cardiac cycle refers to a repetitive pumping process that includes all of the events associated with the flow of blood through the heart. The cycle has two phases for each heart chamber: systole and diastole.

40. (1.0 point)

Which side of the heart is a high-pressure system that pumps arterial blood to the systemic circulation?

Correct Answer:

The left side of the heart is a high-pressure system that pumps arterial blood to the systemic circulation.

41. (1.0 point)

The myocardium is subdivided into two areas. The innermost half of the myocardium is called the _____ and the outermost half is called the _____.

Correct Answer:

The myocardium is subdivided into two areas. The innermost half of the myocardium is called the subendocardium and the outermost half is called the subepicardium.

42. (1.0 point)

List the two main branches of the left coronary artery.

Correct Answer:

The left anterior descending and circumflex are the two main branches of the left coronary artery.

43. (1.0 point)

List two factors that may affect the heart's efficiency as a pump.

Correct Answer:

The efficiency of the heart as a pump may be affected by abnormalities of cardiac muscle, the valves, or the conduction system.

44. (1.0 point)

What is meant by the term "ejection fraction?"

Correct Answer:

Ejection fraction is the percentage of blood pumped out of a heart chamber with each contraction. Each ventricle holds about 150 mL when it is full. They normally eject only about half this volume (70 to 80 mL) with each contraction.

45. (1.0 point)

Explain the Frank-Starling law of the heart.

Correct Answer:

According to the Frank-Starling law of the heart, to a point, the greater the volume of blood in the heart during diastole, the more forceful the cardiac contraction, and the more blood the ventricle will pump (stroke volume). This is important so that the heart can adjust its pumping capacity in response to changes in venous return, such as

during exercise. If, however, the ventricle is stretched beyond its physiological limit, cardiac output may fall due to volume overload and overstretching of the muscle fibers.

46. (1.0 point)

List the four major electrolytes that influence cardiac function.

- 1.
- 2.
- 3.
- 4.

Correct Answer:

The four major electrolytes that influence cardiac function are sodium, potassium, calcium, and chloride.

47. (1.0 point)

A patient has a heart rate of 80 beats/min. His stroke volume is 70 mL/beat. Is his cardiac output normal, decreased, or increased?

Correct Answer:

Stroke volume = 70 mL/beat

Heart rate = 80 beats/min

$SV \times HR = CO$

$70 \text{ mL/beat} \times 80 \text{ beats/min} = 5600 \text{ mL/min} = 5.6 \text{ L/min}$

Cardiac output = normal (normal is between 4 and 8 L/min)

48. (1.0 point)

Define the term "acute coronary syndromes."

Correct Answer:

Acute coronary syndromes (ACSs) are conditions caused by a similar sequence of pathologic events—a temporary or permanent blockage of a coronary artery. This sequence of events results in conditions ranging from myocardial ischemia or injury, to death (necrosis) of heart muscle. The usual cause of an ACS is the rupture of an atherosclerotic plaque.

49. (1.0 point)

Identify the two basic types of cardiac cells in the heart, where they are found, and the function of each.

Correct Answer:

In general, cardiac cells have either a mechanical (contractile) or an electrical (pacemaker) function. Myocardial cells (working or mechanical cells) contain contractile filaments. When these cells are electrically stimulated, the contractile filaments slide together and the myocardial cell contracts. These myocardial cells form the thin muscular layer of the atrial walls and the thicker muscular layer of the ventricular walls (the myocardium). These cells do not normally generate electrical impulses on their own. They rely on pacemaker cells

for this purpose.

Pacemaker cells are specialized cells of the heart's electrical system. Pacemaker cells also may be referred to as conducting cells or automatic cells. They are responsible for spontaneously generating and conducting electrical impulses.

50. (1.0 point)

Indicate the inherent rates for each of the following pacemaker sites:

SA node: _____

AV junction: _____

Ventricles: _____

Correct Answer:

SA node: 60 to 100 beats/min

AV junction: 40 to 60 beats/min

Ventricles: 20 to 40 beats/min