***Interpreting ECGs, 3e* (Shade)**

**Chapter 1 Anatomy and Electrophysiology of the Heart**

1) The electrocardiogram

A) is referred to as an ECC.

B) detects and records the heart's electrical activity.

C) is a graphic representation of the heart's electrical activity.

D) measures the heart's cardiac output.

Answer: C

Difficulty: 1 Easy

Topic: The Electrocardiogram

Learning Objective: 01-01

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

2) As the impulse moves toward a positive electrode of the ECG, it produces a

A) positive waveform.

B) negative waveform.

C) downward deflection.

D) flat line.

Answer: A

Difficulty: 1 Easy

Topic: The Electrocardiogram

Learning Objective: 01-01

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

3) The three main components of the circulatory system include the

A) heart, lungs, blood vessels.

B) blood, blood vessels, heart.

C) spleen, heart, blood vessels.

D) blood vessels, heart, liver.

Answer: B

Difficulty: 1 Easy

Topic: The Circulatory System

Learning Objective: 01-02

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

4) The heart

A) is the pump of the circulatory system.

B) constantly beats a given number of times per minute regardless of the body's needs.

C) looks like a ball, almost perfectly round.

D) beats on an average of 100 times a minute.

Answer: A

Difficulty: 1 Easy

Topic: Anatomy of the Heart

Learning Objective: 01-03

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

5) Which of the following is correct regarding the position of the heart?

A) It lies on the diaphragm to the right of the trachea, esophagus, and thoracic vertebrae.

B) About two-thirds of the heart is situated in the right side of the chest cavity.

C) Its apex is directed posteriorly and slightly superiorly at the level of the second intercostal space.

D) It is located between the two lungs in the mediastinum behind the sternum.

Answer: D

Difficulty: 1 Easy

Topic: Anatomy of the Heart

Learning Objective: 01-03

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

6) The sac that surrounds the heart

A) is called the mediastinum.

B) is a thick, single-walled closed sac.

C) allows the heart to contract and expand within the chest cavity with minimal friction.

D) has tough fibrous outer layer called the visceral pericardium and an inner, thin transparent lining called the fibrous pericardium.

Answer: C

Difficulty: 1 Easy

Topic: Anatomy of the Heart

Learning Objective: 01-03

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

7) The thickest layer of the heart is the

A) Pericardium, the outermost layer, which is a fibrous membrane.

B) Myocardium, the middle layer, which is the muscular layer.

C) Endocardium, the outermost layer, which is the smooth outer surface of the heart.

D) Epicardium, the innermost layer, which is watertight and prevents leakage of blood out into the other layers.

Answer: B

Difficulty: 1 Easy

Topic: Anatomy of the Heart

Learning Objective: 01-03

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

8) The ventricles

A) are the two upper chambers of the heart

B) are thin-walled low pressure containers that collect blood from the systemic and pulmonary circulations.

C) are both the same thickness.

D) are the muscular chambers that pump blood to the pulmonary and systemic circulations.

Answer: D

Difficulty: 1 Easy

Topic: Anatomy of the Heart

Learning Objective: 01-03

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

9) The muscular wall that separates the right side from the left side of the heart is the

A) septum.

B) skeleton of the heart.

C) syncytium.

D) chordae tendineae.

Answer: A

Difficulty: 1 Easy

Topic: Anatomy of the Heart

Learning Objective: 01-03

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

10) The heart valve that is located between the right atrium and right ventricle is the \_\_\_\_\_\_\_\_valve.

A) mitral

B) tricuspid

C) aortic

D) pulmonic

Answer: B

Difficulty: 1 Easy

Topic: Anatomy of the Heart

Learning Objective: 01-03

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

11) The skeleton of the heart

A) is a plate of muscular tissue.

B) is the heart's conduction system.

C) acts to join the atria and ventricles together as one unit.

D) electrically insulates the atria from the ventricles.

Answer: D

Difficulty: 1 Easy

Topic: Anatomy of the Heart

Learning Objective: 01-03

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

12) Structurally, the working myocardial cells are

A) cylindrical, branching, and contain many nuclei located throughout.

B) enclosed in a plasma membrane called a contractile element.

C) made up of a small latticework of intricate strands composed of two protein filaments referred to as actin and myosin.

D) supplied with energy by the desmosomes which are interspersed within the cell.

Answer: C

Difficulty: 1 Easy

Topic: Cells of the Heart

Learning Objective: 01-04

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

13) Pacemaker cells and electrical conducting cells

A) have more myofibrils than working cells.

B) can contract if properly stimulated.

C) have more gap junctions than working cells.

D) all of these.

Answer: C

Difficulty: 1 Easy

Topic: Cells of the Heart

Learning Objective: 01-04

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

14) The electrical event that normally initiates the heartbeat is produced by a group of specialized electrical tissues called the

A) sinoatrial (SA) node.

B) atrioventricular (AV) node.

C) bundle of His.

D) Purkinje fibers.

Answer: A

Difficulty: 1 Easy

Topic: Influences on the Heart and Circulatory System

Learning Objective: 01-04

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

15) The AV node

A) is located high on the posterior wall of the right atrium.

B) is the only pathway for impulses to move from the atria to the ventricles.

C) conducts the impulse more quickly than the remainder of the conduction system.

D) has an intrinsic rate of 20 to 40 beats per minute.

Answer: B

Difficulty: 1 Easy

Topic: Structure of Conduction System

Learning Objective: 01-05

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

16) The bundle of His

A) passes from the walls of the right atria through a small opening in the fibrous skeleton to reach the interventricular septum.

B) divides into the anterior fascicle and the posterior fascicle in the interventricular septum.

C) extends beneath the endocardium on either side of the interventricular septum to the apex of each ventricle.

D) has an intrinsic rate of 60 to 100 beats per minute.

Answer: A

Difficulty: 1 Easy

Topic: Structure of Conduction System

Learning Objective: 01-05

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

17) The \_\_\_\_\_\_\_\_ further divides into three division—the septal fascicle, the anterior fascicle, and the posterior fascicle.

A) AV node

B) right bundle branch

C) left bundle branch

D) Purkinje fibers

Answer: C

Difficulty: 1 Easy

Topic: Structure of Conduction System

Learning Objective: 01-05

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

18) The heart receives most of its blood supply via the \_\_\_\_\_\_\_\_ arteries.

A) coronary

B) pulmonary

C) cerebral

D) renal

Answer: A

Difficulty: 1 Easy

Topic: Coronary Circulation

Learning Objective: 01-06

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

19) The right coronary artery supplies blood to the

A) right atrium, right ventricle, inferior and posterior walls of the left ventricle, and posterior one-third of the interventricular septum.

B) anterior surface and part of the lateral surface of the left ventricle and the anterior two-thirds of the interventricular septum.

C) left atrium and the anterolateral, posterolateral, and the posterior wall of the left ventricle.

D) SA node (in about 40% to 50% of the population) and the AV node (in about 10% to 15% of the population).

Answer: A

Difficulty: 1 Easy

Topic: Coronary Circulation

Learning Objective: 01-06

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

20) Which of the following is true regarding cardiac output?

A) Normal contraction of the ventricles results in 250–350 milliliters of blood being ejected into the pulmonary and systemic circulations.

B) The amount of blood ejected from the ventricles with each contraction is referred to as the stroke volume.

C) Stroke volume is dependent on preload and blood pressure.

D) Contraction of the atria and ventricles is referred to as diastole.

Answer: B

Difficulty: 1 Easy

Topic: Cardiac Output

Learning Objective: 01-07

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

21) Cardiac output is the equivalent of the \_\_\_\_\_\_\_\_ multiplied by the \_\_\_\_\_\_\_\_.

A) peripheral resistance; blood pressure

B) blood pressure; stroke volume

C) heart rate; peripheral resistance

D) heart rate; stroke volume

Answer: D

Difficulty: 1 Easy

Topic: Cardiac Output

Learning Objective: 01-07

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

22) Automaticity is the ability of certain myocardial cells to

A) produce electrical activity (action potential) without the need for outside nerve stimulation.

B) respond to an electrical stimulus.

C) transmit an electrical stimulus from cell to cell throughout the myocardium.

D) contract when stimulated by an electrical impulse.

Answer: A

Difficulty: 1 Easy

Topic: Blood Circulation

Learning Objective: 01-07

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

23) The P wave represents

A) the rapid conduction of the impulse through the bundle of His, the left and right bundle branches, and the terminal Purkinje fibers.

B) the delay in conduction as it passes through the AV node.

C) an absence of electrical activity.

D) initiation of the impulse in the SA node and its conduction across the atria, and through the intranodal pathways to the AV node.

Answer: D

Difficulty: 1 Easy

Topic: Blood Circulation

Learning Objective: 01-07

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

24) Regulation of the heart rate, speed of electrical conduction, and strength of contraction are influenced by the brain via the \_\_\_\_\_\_\_\_ nervous system.

A) autonomic

B) central

C) somatic

D) voluntary

Answer: A

Difficulty: 1 Easy

Topic: Influences on the Heart and Circulatory System

Learning Objective: 01-08

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

25) Baroreceptors are responsible for

A) sensing changes in the chemical composition of the blood.

B) identifying changes in pressure, usually within the heart or the main arteries.

C) releasing hormones or neurotransmitters into the bloodstream to correct heart rate abnormalities.

D) controlling the amount of blood returning to the heart from the venous circulation.

Answer: B

Difficulty: 1 Easy

Topic: Influences on the Heart and Circulatory System

Learning Objective: 01-08

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

26) The cardioaccelerator center

A) is in the cortex of the brain.

B) is part of the parasympathetic nervous system.

C) is part of the sympathetic nervous system.

D) transmits signals to the heart by way of the vagus nerves.

Answer: C

Difficulty: 1 Easy

Topic: Influences on the Heart and Circulatory System

Learning Objective: 01-08

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

27) Which of the following are primarily responsible for initiating electrical charges?

A) Sodium (Na+) and calcium (Ca++)

B) Glucose and proteins

C) Calcium (Ca++) and potassium (K+)

D) Actin and myosin

Answer: A

Difficulty: 1 Easy

Topic: Nerve Impulse Generation and Muscle Contraction

Learning Objective: 01-09

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

28) Which of the following is found on the outside of resting or polarized cells?

A) A high concentration of negatively charged ions, proteins, and organelles

B) A negative electrical charge

C) A high concentration of positively charged ions

D) An electrical charge that is the same as inside the cell

Answer: C

Difficulty: 1 Easy

Topic: Nerve Impulse Generation and Muscle Contraction

Learning Objective: 01-09

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

29) Impulses are generated and subsequently transmitted when

A) calcium quickly exits the cell causing the inside of the cell to become more positively charged.

B) sodium rapidly but briefly moves inside the cells causing the interior to become positively charged.

C) potassium slowly exits the cell causing the inside of the cell to become more negatively charged.

D) potassium slowly moves inside the cells causing the interior to become positively charged.

Answer: B

Difficulty: 1 Easy

Topic: Nerve Impulse Generation and Muscle Contraction

Learning Objective: 01-09

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

30) Positively charged ions such as potassium leaving the cell causing the positive charge to lower is called

A) depolarization.

B) polarized state.

C) afterpolarization.

D) repolarization.

Answer: D

Difficulty: 1 Easy

Topic: Nerve Impulse Generation and Muscle Contraction

Learning Objective: 01-09

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation

31) Which of the following is true?

A) For any muscle to contract, it must first be electrically stimulated.

B) During the absolute refractory period, a sufficiently strong stimulus will depolarize the myocardium.

C) A normal ECG tracing on the cardiac monitor tells us the heart is contracting and producing a blood pressure.

D) The SA node is stimulated to fire spontaneously through the property of excitability.

Answer: A

Difficulty: 1 Easy

Topic: Nerve Impulse Generation and Muscle Contraction

Learning Objective: 01-09

Bloom's: Remember

Est Time: 0-1 Minute

Accessibility: Keyboard Navigation