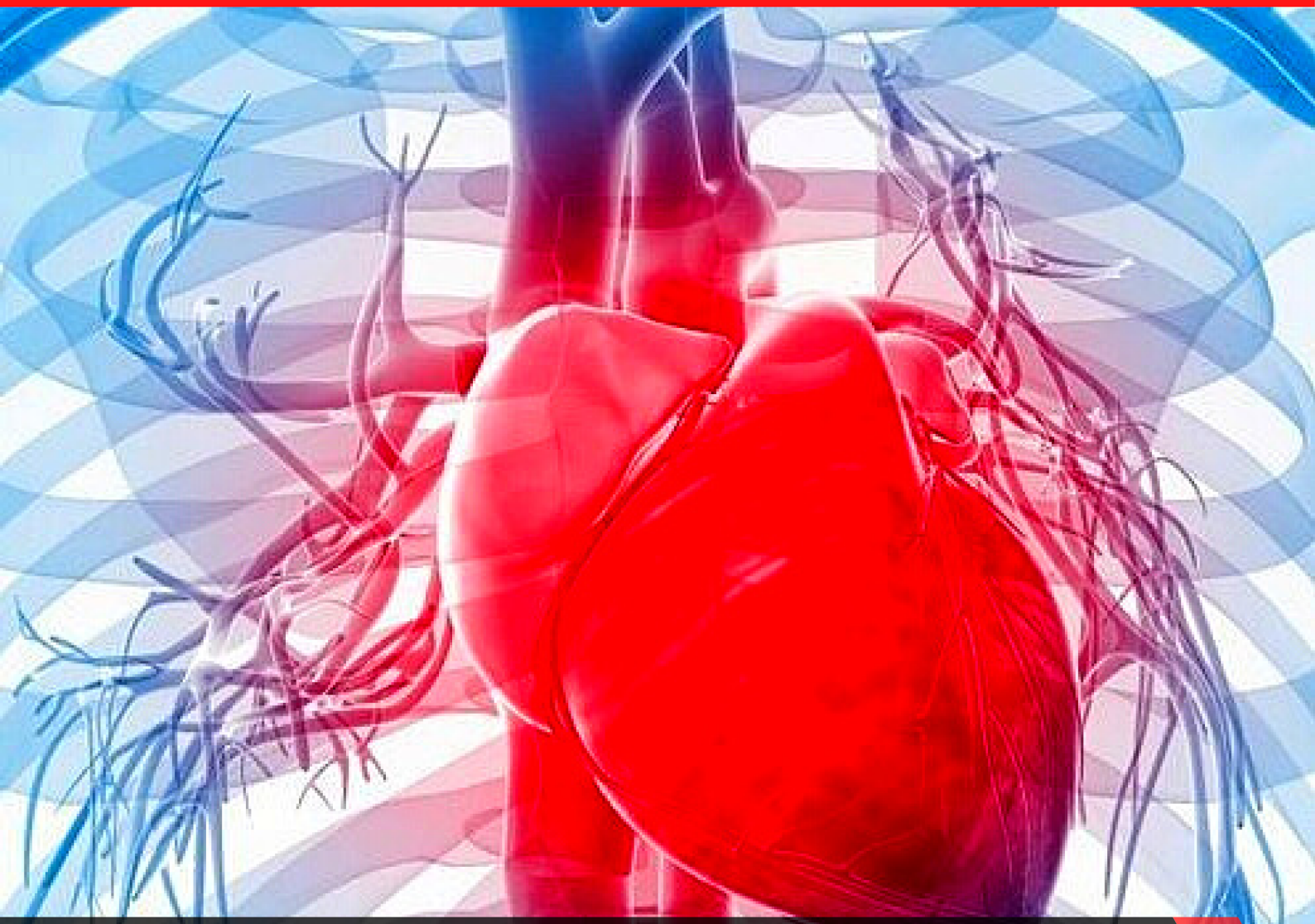
PRACTICE EXAMS

ON THE

CARDIOVASCULAR

SYSTEM

MODEL ANSWERS INCLUDED



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MCQ & SAQ QUESTIONS

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A Message From Our Team

Revising for medical exams is stressful; believe us, we know from experience! Trying to balance depth of knowledge with breadth of knowledge is always the challenge. And as a student, it's often hard to know where the right balance is, and it's easy to go down unnecessary and time-consuming rabbit holes that won't help you in the exams. That's where the experienced team at MedStudentNotes comes in!

In this series of **PRACTICE EXAMS** we have used our medical experience to create a comprehensive set of quizzes that are tailored just right to help you to ACE your exams and maximize retention. We have created numerous mini-quizzes (both multi-choice and short-answer) on all the subtopics relating to this subject. That way you can do them at your own pace and correct the questions you get wrong there and then!

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Table Of Contents:

What's included: A comprehensive set of university-level multiple-choice (MCQ) and short-answer (SAQ) exam questions covering everything to do with **the cardiovascular system**. All answer keys are provided directly after each quiz so that you can revise and reassess as you go, helping you learn better and improve retention.

Quizzes in this booklet:

MCQ: Anatomy of the heart:

1) Where is the heart located within the thoracic cavity?
    a. Superior mediastinum
    b. Middle mediastinum
    c. Inferior mediastinum
    d. Anterior mediastinum

2) What is the outermost layer of the heart called?
    a. Myocardium
    b. Pericardium
    c. Endocardium
    d. Epicardium

3) Which layer of the heart is responsible for contracting and pumping blood?
    a. Myocardium
    b. Pericardium
    c. Endocardium
    d. Epicardium

4) Which structure separates the two atria of the heart?
    a. Interatrial septum
    b. Interventricular septum
    c. Atrial wall
    d. Ventricular wall

5) What is the function of the fibrous skeleton of the heart?
    a. Contraction
    b. Electrical insulation
    c. Blood filtration
    d. Oxygenation

6) Which chamber of the heart receives deoxygenated blood from the body?
    a. Right atrium
    b. Right ventricle
    c. Left atrium
    d. Left ventricle

7) What are the two great vessels that return blood to the heart?
    a. Aorta and pulmonary artery
    b. Superior and inferior vena cava
    c. Pulmonary veins and coronary arteries
    d. Aorta and pulmonary veins

8) What structure is located at the base of the pulmonary trunk and the ascending aorta?
    a. Aortic arch
    b. Semilunar valves
    c. Atrioventricular valves
    d. Chordae tendineae

9) What is the correct order of blood flow through the heart, starting with deoxygenated blood from the body?
    a. Right atrium, right ventricle, left atrium, left ventricle
    b. Right atrium, left atrium, right ventricle, left ventricle
    c. Left atrium, left ventricle, right atrium, right ventricle
    d. Left atrium, right atrium, left ventricle, right ventricle

10) What supplies oxygenated blood to the myocardium?
    a. Aorta
    b. Coronary arteries
    c. Pulmonary veins
    d. Pulmonary arteries

11) Which valve separates the left atrium and left ventricle?
    a. Tricuspid valve
    b. Bicuspid (mitral) valve
    c. Aortic valve
    d. Pulmonary valve

12) Which structure anchors the atrioventricular valve leaflets to the ventricular walls?
    a. Chordae tendineae
    b. Papillary muscles
    c. Intercalated discs
    d. Purkinje fibers

13) Which of the following is a landmark on the surface of the heart?
    a. Coronary sulcus
    b. Fossa ovalis
    c. Crista terminalis
    d. Mitral annulus

14) The left coronary artery branches into which two main arteries?
    a. Anterior interventricular artery and right marginal artery
    b. Anterior interventricular artery and circumflex artery
    c. Posterior interventricular artery and circumflex artery
    d. Posterior interventricular artery and right marginal artery

15) What is the function of coronary veins?
    a. Deliver oxygen-rich blood to the heart muscle
    b. Drain oxygen-poor blood from the heart muscle
    c. Deliver oxygen-rich blood to the lungs
    d. Drain oxygen-poor blood from the lungs

16) Which heart sound is produced by the closure of atrioventricular valves?
    a. S1
    b. S2
    c. S3
    d. S4

17) Which heart sound is associated with the closure of the semilunar valves?

a. S1
b. S2
c. S3
d. S4

18) What structure carries oxygen-poor blood from the right ventricle to the lungs?

a. Aorta
b. Pulmonary artery
c. Pulmonary veins
d. Superior vena cava

19) Which structure returns oxygen-rich blood from the lungs to the left atrium?

a. Aorta
b. Pulmonary artery
c. Pulmonary veins
d. Superior vena cava

20) What is the correct term for the pointed, inferior portion of the heart?

a. Base
b. Apex
c. Arch
d. Crown

Answer Key:

1) b
2) b
3) a
4) a
5) b
6) a
7) b
8) b
9) a
10) b
11) b
12) a
13) a
14) b
15) b
16) a
17) b
18) b
19) c
20) b

SAQ: Anatomy of the heart:

1) What is the double-walled sac surrounding the heart called?

2) Which type of muscle tissue is the myocardium primarily composed of?

3) In the context of the heart's anatomy, what is the function of trabeculae carneae?

4) What is the purpose of the papillary muscles in the heart?

5) Which component of the heart's fibrous skeleton provides attachment points for the myocardium and valves?

6) Through which structure does oxygen-poor blood enter the right atrium from the upper body?

7) Which blood vessel carries oxygen-rich blood from the lungs to the heart?

8) How many cusps does the aortic valve have?

9) Describe the pathway of blood flow between the right atrium and the pulmonary circulation.

10) What is the primary function of the coronary sinus?

11) Which valve is located between the right atrium and right ventricle?

12) Name the structure that anchors the atrioventricular valve leaflets to the papillary muscles.

13) What is the purpose of the interventricular sulci on the heart's surface?

14) Name the main branches of the right coronary artery.

15) Which vessel drains oxygen-poor blood from the myocardium and returns it to the right atrium?

16) During which phase of the cardiac cycle do the atrioventricular valves close?

17) Where should a stethoscope be placed to best auscultate the mitral valve?

18) What is the primary function of the moderator band in the right ventricle?

19) What structure within the heart allows electrical impulses to pass from the atria to the ventricles?

20) What is the function of the coronary ostia?

Answer Key:

1) Pericardium
2) Cardiac muscle
3) The trabeculae carneae help in ventricular contraction, assist papillary muscles in tensioning the chordae tendineae, and may also play a role in intraventricular conduction.
4) Papillary muscles prevent the atrioventricular valves from prolapsing during ventricular contraction.
5) The annuli fibrosi provide attachment points for the myocardium and valves.
6) Superior vena cava
7) Pulmonary veins
8) Three cusps
9) Blood flows from the right atrium, through the tricuspid valve, into the right ventricle, and then through the pulmonary valve into the pulmonary artery, which carries the blood to the lungs.
10) The coronary sinus drains oxygen-poor blood from the myocardium and returns it to the right atrium.
11) Tricuspid valve
12) Chordae tendineae
13) The interventricular sulci contain blood vessels and mark the separation between the ventricles.
14) Right marginal artery and posterior interventricular artery
15) Coronary sinus
16) Isovolumetric contraction phase
17) The stethoscope should be placed at the apex of the heart, at the fifth intercostal space, midclavicular line.
18) The moderator band carries part of the right bundle branch of the AV bundle and prevents overexpansion of the ventricle during diastole. Also aids in the coordinated contraction of the ventricles during each heartbeat.
19) Atrioventricular (AV) node
20) The coronary ostia supply oxygen-rich blood to the coronary arteries.

MCQ: Electrophysiology of the heart:

1) What is the primary function of the sinoatrial (SA) node?
    a) Initiating electrical impulses for atrial contraction
    b) Delaying electrical impulses between the atria and ventricles
    c) Distributing electrical impulses throughout the ventricles
    d) Regulating the heart's overall rate

2) What is the correct order of the cardiac conduction system?
    a) SA node, AV node, bundle of His, bundle branches, Purkinje fibers
    b) AV node, SA node, bundle of His, bundle branches, Purkinje fibers
    c) SA node, bundle of His, AV node, bundle branches, Purkinje fibers
    d) AV node, bundle of His, SA node, bundle branches, Purkinje fibers

3) Which part of the cardiac conduction system is responsible for distributing electrical impulses throughout the ventricles?
    a) Sinoatrial (SA) node
    b) Atrioventricular (AV) node
    c) Bundle of His
    d) Purkinje fibers

4) What is the term for the pacemaker cells in the heart that generate spontaneous action potentials?
    a) Conductile cells
    b) Contractile cells
    c) Autorhythmic cells
    d) Excitable cells

5) What is the main factor responsible for the initiation of depolarization in the SA node?
    a) Influx of calcium ions
    b) Influx of potassium ions
    c) Influx of sodium ions
    d) Efflux of chloride ions

6) What is the primary effect of parasympathetic stimulation on the heart?
    a) Increased heart rate
    b) Decreased heart rate
    c) Increased contractility
    d) Decreased contractility

7) Which neurotransmitter is released by the sympathetic nervous system to stimulate the heart?
    a) Acetylcholine
    b) Norepinephrine
    c) Dopamine
    d) Serotonin

8) Which phase of the action potential in contractile cells is characterized by rapid depolarization?
    a) Phase 0
    b) Phase 1
    c) Phase 2
    d) Phase 3

9) What ion is primarily responsible for the plateau phase of the action potential in contractile cells?
    a) Sodium
    b) Potassium
    c) Calcium
    d) Chloride

10) What is the term for the period during which a new action potential cannot be initiated in a cardiac cell?
    a) Depolarization period
    b) Repolarization period
    c) Absolute refractory period
    d) Relative refractory period

11) Which of the following properties is unique to the atrioventricular (AV) node?
    a) Slow conduction velocity
    b) High conduction velocity
    c) Spontaneous depolarization
    d) Rapid repolarization

12) What is the function of the bundle branches in the cardiac conduction system?
    a) Initiating electrical impulses
    b) Delaying electrical impulses
    c) Transmitting electrical impulses to the Purkinje fibers
    d) Transmitting electrical impulses to the SA node

13) Which of the following ions plays a major role in repolarization of contractile cells?
    a) Sodium
    b) Potassium
    c) Calcium
    d) Chloride

14) What is the term for the period during which a cardiac cell can be excited by a strong stimulus?
    a) Depolarization period
    b) Repolarization period
    c) Absolute refractory period
    d) Relative refractory period

15) What is the effect of sympathetic stimulation on the atrioventricular (AV) node?
    a) Increased conduction velocity
    b) Decreased conduction velocity
    c) Increased refractory period
    d) Decreased refractory period

16) What is the resting membrane potential of a contractile cell in the myocardium?
    a) -60 mV
    b) -70 mV
    c) -90 mV
    d) -110 mV

17) Which phase of the action potential in contractile cells represents the resting membrane potential?
    a) Phase 0
    b) Phase 1
    c) Phase 2
    d) Phase 4

18) Which structure in the conduction system ensures that electrical impulses are transmitted from the atria to the ventricles and not in the reverse direction?
    a) SA node
    b) AV node
    c) Bundle of His
    d) Purkinje fibers

19) What is the primary effect of the parasympathetic nervous system on the SA node?
    a) Decreased action potential firing rate
    b) Increased action potential firing rate
    c) Increased conduction velocity
    d) Decreased conduction velocity

Answer Key:

1) a
2) a
3) d
4) c
5) c
6) b
7) b
8) a
9) c
10) c
11) a
12) c
13) b
14) d
15) a
16) c
17) d
18) b
19) a

SAQ: Electrophysiology of the heart:

1) What is the role of the sinoatrial (SA) node in the heart's electrical activity?

2) Describe the order in which electrical impulses travel through the cardiac conduction system.

3) What type of cells make up the majority of the heart's conduction system?

4) Explain the function of the atrioventricular (AV) node in the cardiac conduction system.

5) What ion channels are primarily responsible for initiating the depolarization of the SA node?

6) How does parasympathetic stimulation affect heart rate and contractility?

7) Name the neurotransmitter released by the sympathetic nervous system that acts on the heart.

8) What ion is primarily responsible for the rapid depolarization phase of contractile cell action potentials?

9) Which ion is responsible for maintaining the plateau phase in contractile cell action potentials?

10) What is the difference between the absolute refractory period and the relative refractory period in cardiac cells?

11) What unique property of the AV node helps to ensure proper timing of atrial and ventricular contractions?

12) What is the primary function of the bundle branches in the cardiac conduction system?

13) Which ion is responsible for repolarizing contractile cells in the myocardium?

14) Describe the conditions under which a cardiac cell can be excited during the relative refractory period.

15) How does sympathetic stimulation affect the conduction velocity of the AV node?

16) What is the typical resting membrane potential of a contractile cell in the myocardium?

17) During which phase of the action potential do contractile cells maintain their resting membrane potential?

18) How does the cardiac conduction system prevent electrical impulses from traveling in the reverse direction, from the ventricles to the atria?

19) How does an increase in extracellular potassium concentration influence the resting membrane potential of cardiac cells?

20) What is the primary effect of parasympathetic stimulation on the SA node's action potential firing rate?

Answer Key:

1) The SA node initiates electrical impulses that regulate the heartbeat and control atrial contraction.
2) SA node, AV node, bundle of His, bundle branches, Purkinje fibers.
3) Autorhythmic cells.
4) The AV node delays the transmission of electrical impulses between the atria and ventricles, allowing the atria to contract before the ventricles.
5) The funny current (If) channels, which are responsible for the influx of sodium ions, which then causes opening of calcium channels which leads to further depolarisation of the SA node cells.
6) Parasympathetic stimulation decreases heart rate and contractility.
7) Norepinephrine.
8) Sodium ions.
9) Calcium ions.
10) During the absolute refractory period, a new action potential cannot be initiated, while during the relative refractory period, a stronger-than-normal stimulus can initiate an action potential.
11) The AV node has a slow conduction velocity, allowing for proper timing between atrial and ventricular contractions.
12) The bundle branches transmit electrical impulses to the Purkinje fibers, which distribute them throughout the ventricles.
13) Potassium ions.
14) During the relative refractory period, a cardiac cell can be excited by a stronger-than-normal stimulus.
15) Sympathetic stimulation increases the conduction velocity of the AV node.
16) -90 mV.
17) Phase 4.
18) The AV node and the bundle of His prevent electrical impulses from traveling in reverse by allowing impulses to only move in the direction from the atria to the ventricles.
19) An increase in extracellular potassium concentration causes depolarization of the resting membrane potential.
20) Parasympathetic stimulation decreases the action potential firing rate of the SA node.

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End of Sample

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