



EXERCISES

Remember to check your answers carefully with the Answers to Exercises, page 445.

A Match the following terms with their meanings below.

aorta
arteriole
atrium
capillary

inferior vena cava
mitral valve
pulmonary artery
pulmonary vein

superior vena cava
tricuspid valve
ventricle
venule

1. valve that lies between the right atrium and the right ventricle _____
2. smallest blood vessel _____
3. carries oxygenated blood from the lungs to the heart _____
4. largest artery in the body _____
5. brings oxygen-poor blood into the heart from the upper parts of the body _____
6. upper chamber of the heart _____
7. carries oxygen-poor blood to the lungs from the heart _____
8. small artery _____
9. valve that lies between the left atrium and the left ventricle _____
10. brings blood from the lower half of the body to the heart _____
11. a small vein _____
12. lower chamber of the heart _____

B Trace the path of blood through the heart. Begin as the blood enters the right atrium from the venae cavae (and include the valves within the heart).

- | | |
|---|------------------------|
| 1. <i>right atrium</i> _____ | 7. _____ |
| 2. _____ | 8. _____ |
| 3. _____ | 9. _____ |
| 4. _____ | 10. _____ |
| 5. _____ | 11. _____ |
| 6. <i>capillaries of the lung</i> _____ | 12. <i>aorta</i> _____ |

C Complete the following sentences.

1. The pacemaker of the heart is the _____.
2. The sac-like membrane surrounding the heart is the _____.
3. The wall of the heart between the right and the left atria is the _____.
4. The relaxation phase of the heartbeat is called _____.
5. Specialized conductive tissue in the wall between the ventricles is the _____.
6. The inner lining of the heart is the _____.
7. The contractive phase of the heartbeat is called _____.
8. A gas released as a metabolic product of catabolism is _____.
9. Specialized conductive tissue at the base of the wall between the two upper heart chambers is the _____.
10. The inner lining of the pericardium, adhering to the outside of the heart, is the _____.
11. An abnormal heart sound due to improper closure of heart valves is a _____.
12. The beat of the heart as felt through the walls of arteries is called the _____.

D Complete the following terms using the given definitions.

1. hardening of arteries: arterio_____
2. disease condition of heart muscle: cardio_____
3. enlargement of the heart: cardio_____
4. inflammation of a vein: phleb_____
5. condition of rapid heartbeat: _____cardia
6. condition of slow heartbeat: _____cardia
7. high levels of cholesterol in the blood: hyper_____
8. surgical repair of a valve: valvulo_____
9. condition of deficient oxygen: hyp_____
10. pertaining to an upper heart chamber: _____al
11. narrowing of the mitral valve: mitral_____
12. breakdown of a clot: thrombo_____

E Give the meanings of the following terms.

1. cyanosis _____
2. phlebotomy _____
3. arterial anastomosis _____
4. cardiogenic shock _____
5. atheroma _____
6. arrhythmia _____
7. sphygmomanometer _____
8. stethoscope _____
9. mitral valvulitis _____
10. atherosclerosis _____
11. vasoconstriction _____
12. vasodilation _____

F Match the following pathologic conditions of the heart with their meanings below.

- | | | |
|--------------------------|----------------------------|--------------------------|
| atrial septal defect | endocarditis | mitral valve prolapse |
| coarctation of the aorta | fibrillation | patent ductus arteriosus |
| congestive heart failure | flutter | pericarditis |
| coronary artery disease | hypertensive heart disease | tetralogy of Fallot |

1. inflammation of the inner lining of the heart _____
2. rapid but regular atrial or ventricular contractions _____
3. small hole between the upper heart chambers; congenital anomaly _____
4. improper closure of the valve between the left atrium and ventricle during systole

5. blockage of the arteries surrounding the heart leading to ischemia _____
6. high blood pressure affecting the heart _____
7. rapid, random, ineffectual, and irregular contractions of the heart _____
8. inflammation of the sac surrounding the heart _____
9. inability of the heart to pump its required amount of blood _____
10. congenital malformation involving four separate heart defects _____
11. congenital narrowing of the large artery leading from the heart _____
12. a duct between the aorta and the pulmonary artery, which normally closes soon after birth,
remains open _____

G Give the meanings of the following terms.

1. heart block _____
2. cardiac arrest _____
3. palpitations _____
4. artificial cardiac pacemaker _____
5. thrombotic occlusion _____
6. angina _____
7. myocardial infarction _____
8. necrosis _____
9. infarction _____
10. ischemia _____
11. nitroglycerin _____
12. digoxin _____
13. bruit _____
14. thrill _____
15. acute coronary syndromes _____
16. pericardial friction rub _____
17. deep vein thrombosis _____
18. biventricular pacemaker _____

H Match the following terms with their descriptions.

| | | |
|--------------|-----------------------------|-------------------------|
| aneurysm | essential hypertension | Raynaud disease |
| auscultation | murmur | rheumatic heart disease |
| claudication | peripheral arterial disease | secondary hypertension |
| emboli | petechiae | vegetations |

1. lesions that form on heart valves after damage by infection _____
2. clots that travel to and suddenly block a blood vessel _____
3. small, pinpoint hemorrhages _____
4. an extra heart sound, heard between normal beats and caused by a valvular defect or condition that disrupts the smooth flow of blood through the heart _____
5. listening with a stethoscope _____
6. heart disease caused by rheumatic fever _____
7. high blood pressure in arteries when the etiology is idiopathic _____
8. high blood pressure related to kidney disease _____
9. episodes of ischemia with pallor and numbness in fingers and toes caused by a temporary constriction of arterioles in the skin _____
10. local widening of an artery _____
11. pain, tension, and weakness in a limb after walking has begun _____
12. blockage of arteries in the lower extremities; etiology is atherosclerosis _____

I Give short answers for the following.

1. Types of drugs used to treat acute coronary syndromes include _____

2. When damaged valves in veins fail to prevent the backflow of blood, a condition (swollen, twisted vein) that results is _____.
3. Swollen, twisted veins in the rectal region are called _____.
4. Name the four defects in tetralogy of Fallot from their descriptions:
 - a. narrowing of the artery leading to the lungs from the heart _____
 - b. gap in the wall between the ventricles _____
 - c. the large vessel leading from the left ventricle moves over the interventricular septum

 - d. excessive development of the wall of the right lower heart chamber _____

J Select from the list of cardiac tests and procedures to complete the definitions below.

angiography (arteriography)
 cardiac biomarkers
 cardiac MRI
 coronary artery bypass graft

defibrillation
 echocardiography
 electrocardiography
 endarterectomy

lipid tests (profile)
 lipoprotein electrophoresis
 stress test
 thallium 201 scan

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1. surgical removal of plaque from the inner lining of an artery _____
2. application of brief electrical discharges across the chest to stop ventricular fibrillation and pulseless ventricular tachycardia _____
3. measurement of levels of fatty substances (cholesterol and triglycerides) in the bloodstream _____
4. measurement of the heart's response to physical exertion (patient monitored while jogging on a treadmill) _____
5. measurement of troponin-T and troponin-I after myocardial infarction _____
6. injection of contrast into vessels and x-ray imaging _____
7. recording of the electricity in the heart _____
8. intravenous injection of a radioactive substance and measurement of its accumulation in heart muscle _____
9. use of echoes from high-frequency sound waves to produce images of the heart _____
10. separation of HDL and LDL from a blood sample _____
11. anastomosis of vessel grafts to existing coronary arteries to maintain blood supply to the myocardium _____
12. beaming of magnetic waves at the heart to produce images of its structure _____

K Give the meanings for the following terms.

1. digital subtraction angiography _____
2. heart transplantation _____
3. ETT-MIBI _____
4. Doppler ultrasound _____
5. Holter monitoring _____
6. thrombolytic therapy _____
7. extracorporeal circulation _____
8. cardiac catheterization _____
9. percutaneous coronary intervention _____
10. drug-eluting stent _____
11. electron beam computed tomography _____
12. computed tomography angiography _____

L Identify the following cardiac dysrhythmias from their abbreviations.

1. AF _____
2. VT _____
3. VF _____
4. PVC _____
5. PAC _____

M Identify the following abnormal cardiac conditions from their abbreviations.

1. CHF _____
2. VSD _____
3. MI _____
4. PDA _____
5. MVP _____
6. AS _____
7. CAD _____
8. ASD _____

N Match the following abbreviations for cardiac tests and procedures with their explanations below.

BNP
CRT
cTnI or cTnT
ECHO

ECMO
ETT
ETT-MIBI
ICD

LDL
LVAD
RFA
TEE

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1. cardiac serum enzyme test for myocardial infarction _____
2. booster pump implanted in the abdomen with a cannula leading to the heart as a “bridge to transplant” _____
3. ultrasound imaging of the heart using transducer within the esophagus _____
4. device implanted in the chest that senses and corrects arrhythmias by shocking the heart _____
5. catheter delivery of a high-frequency current to damage a small portion of the heart muscle and reverse an abnormal heart rhythm _____
6. procedure to determine the heart's response to physical exertion (stress) _____
7. cardiac imaging using high-frequency sound waves pulsed through the chest wall and bounced off heart structures _____
8. radioactive test of heart function with stress test _____
9. technique using heart-lung machine to divert blood from the heart and lungs while the heart is being repaired _____
10. biventricular pacing to correct serious abnormal ventricular rhythms _____
11. lipoprotein sample is measured _____
12. brain chemical measured to identify patients at risk for complications after MI and with CHF _____

O Spell the term correctly from its definition.

1. pertaining to the heart: _____ary
2. not a normal heart rhythm: arr_____
3. abnormal condition of blueness: _____osis
4. relaxation phase of the heartbeat: _____tole
5. chest pain: _____pectoris
6. inflammation of a vein: _____itis
7. widening of a vessel: vaso_____
8. enlargement of the heart: cardio_____
9. hardening of arteries with fatty plaque: _____sclerosis
10. swollen veins in the rectal region: _____oids

P Match the following terms with their meanings below.

- | | | |
|------------------|-------------------|----------------------|
| aneurysmorrhaphy | catheter ablation | pericardiocentesis |
| atherectomy | embolectomy | STEMI |
| BNP test | endarterectomy | thrombolytic therapy |
| CABG | PCI | valvotomy |

1. incision of a heart valve _____
2. removal of a clot that has traveled into a blood vessel and suddenly caused occlusion

3. coronary artery bypass graft (to relieve ischemia) _____
4. surgical puncture to remove fluid from the pericardial space _____
5. insertion of a balloon-tipped catheter and stents into a coronary artery _____
6. removal of the inner lining of an artery to make it wider _____
7. suture (repair) of a ballooned-out portion of an artery _____
8. removal of plaque from an artery _____
9. type of acute coronary syndrome _____
10. use of streptokinase and tPA to dissolve clots _____
11. brief delivery of radiofrequency or cryoenergy destroys areas of heart tissue to treat
arrhythmias _____
12. measures a peptide elevated in patients with heart failure _____

Q Select the boldface term that best completes each sentence.

1. Bill was having pain in his chest that radiated up his neck and down his arm. He called his family physician, who thought Bill should report to the local hospital's emergency department (ED) immediately. The first test performed in the ED was a/an (**stress test, ECG, CABG**).
2. Dr. Kelly explained to the family that their observation of the bluish color of baby Charles's skin helped her make the diagnosis of a/an (**thrombotic, aneurysmal, septal**) defect in the baby's heart, which needed immediate attention.
3. Mr. Duggan had a fever of unknown origin. When the doctors completed an echocardiogram and saw vegetations on his mitral valve, they suspected (**bacterial endocarditis, hypertensive heart disease, angina**).
4. Claudia's hands turned red, almost purple, whenever she went out into the cold or became stressed. Her physician thought it might be wise to evaluate her for (**varicose veins, Raynaud disease, intermittent claudication**).
5. Daisy's heart felt like it was skipping beats every time she drank coffee. Her physician suggested that she wear a/an (**Holter monitor, LVAD, CABG**) for 24 hours to assess the nature of the arrhythmia.
6. Paola's father and grandfather died of heart attacks. Her physician tells her that she has inherited a tendency to accumulate fats in her bloodstream. Blood tests reveal high levels of (**enzymes, lipids, nitroglycerin**). Discussing her family history with her (**gynecologist, hematologist, cardiologist**), she understands that she has familial (**hypcholesterolemia, hypercholesterolemia, cardiomyopathy**).
7. While exercising, Bernard experienced a pain (cramp) in his calf muscle. The pain disappeared when he was resting. After performing (**Holter monitoring, Doppler ultrasound, echocardiography**) on his leg to assess blood flow, Dr. Shaw found (**stenosis, fibrillation, endocarditis**), indicating poor circulation. She recommended a daily exercise program, low-fat diet, careful foot care, and antiplatelet drug therapy to treat Bernard's intermittent (**palpitations, hypertension, claudication**).
8. Carol noticed that her 6-week-old son Louis had a slightly bluish or (**jaundiced, cyanotic, diastolic**) coloration to his skin. She consulted a pediatric (**dermatologist, hematologist, cardiologist**), who performed (**echocardiography, PET scan, endarterectomy**) and diagnosed Louis's condition as (**endocarditis, congestive heart disease, tetralogy of Fallot**).
9. Seventy-eight-year-old John Smith has had coronary artery disease and high blood pressure for the past 10 years. His history included an acute heart attack, or (**MI, PDA, CABG**). He often was tired and complained of (**dyspnea, nausea, migraine headaches**) and swelling in his ankles. His physician diagnosed his condition as (**aortic aneurysm, congestive heart failure, congenital heart disease**) and recommended restricted salt intake, diuretics, and an (**ACE inhibitor, antibiotic, analgesic**).
10. Sarah had a routine checkup that included (**auscultation, vasoconstriction, vasodilation**) of her chest with a (**catheter, stent, stethoscope**) to listen to her heart. Her physician noticed a midsystolic murmur characteristic of (**DVT, MVP, LDL**). An echocardiogram confirmed the diagnosis.