Instructions
For the following questions, indicate the letter that corresponds to the SINGLE MOST
APPROPRIATE ANSWER.

Question 1  Multiple Choice  2.5 Points
Question: During surgery, a cardiothoracic surgeon places her left index finger into the transverse
pericardial sinus from the right side and, with her left thumb, clamps the vessel lying just in front of her
finger. Which vessel has she occluded?
Answer:
A. Superior vena cava
B. Left pulmonary artery
C. Pulmonary vein
D. Ascending aorta
E. Arch of the aorta

Question 2  Multiple Choice  2.5 Points
Question: A chest tube was inserted into the pleural cavity to relieve symptoms resulting from a
mediastinal shift caused by a tension pneumothorax. Structures that would be encountered during the
placement of a chest tube in the right 5th intercostal space, just posterior to the midaxillary line
include all of the following EXCEPT for the
Answer:
A. External intercostal membrane
B. Innermost intercostal muscle
C. Parietal pleura
D. Endothoracic fascia
E. Serratus anterior muscle

Question 3  Multiple Choice  2.5 Points
Question: During exploratory surgery in the superior mediastinum of a 65-year-old man, the surgeon
is aware that all of the following vessels are found in the superior mediastinum EXCEPT for the
Answer:
A. Right common carotid artery
B. Right brachiocephalic vein
C. Arch of the aorta
D. Superior vena cava
E. Azygos vein

Question 4  Multiple Choice  2.5 Points
Question: In inhalation anthrax, endospores of Bacillus anthracis are engulfed by alveolar
macrophages and transported to mediastinal lymph nodes where the anthrax bacilli multiply causing
hemorrhagic mediastinitis. Early in the disease, chest radiographs show a widened mediastinum
which is evidence of lymph node involvement. The anthrax bacilli would initially spread from the lung
parenchyma to the
Answer:
A. Parasternal nodes
B. Bronchopulmonary nodes
C. Tracheobronchial nodes
D. Bronchomediastinal trunks
E. Thoracic duct
Question 5  
Multiple Choice  
2.5 Points  

Question: A bullet penetrating the chest wall in the area marked by the white circle on the AP (anteroposterior) chest film shown below, would enter the

Answer:  
left atrium.  
right atrium.  
pulmonary trunk.  
right ventricle.  
brachiocephalic trunk.

Question 6  
Multiple Choice  
2.5 Points  

Question: An 86-year-old man was rushed to the hospital after experiencing a sudden onset of severe substernal pain that radiated into his left arm. A coronary arteriogram (view is of the left lateral aspect of the heart) is shown below with an area of infarct (white area). An occlusion of which of the following vessels would most likely result in this pattern of myocardial necrosis?

Answer:  
Anterior interventricular artery (LAD)  
Right coronary artery  
Anterior right atrial branch of the right coronary artery  
Circumflex branch of the left coronary artery  
Right marginal artery

Question 7  
Multiple Choice  
2.5 Points  

Question: You performed surgery on a 67-year-old woman to remove a tumor in the posterior mediastinum, which was compressing her thoracic duct. All the following structures were encountered during your surgical exploration of the posterior mediastinum EXCEPT for

Answer:  
vagal nerve fibers.  
the greater splanchnic nerves.  
the azygos vein.  
the esophagus.  
the pulmonary veins.
Question 9  Multiple Choice  2.5 Points

Question: While performing a thoracocentesis to remove fluid, a resident passed a needle through the 9th left intercostal space in the midaxillary line. A structure that could be inadvertently penetrated by the needle is the

Answer:  liver.
pericardial sac.
middle lobe of the lung.
cupula.
diaphragm.

Question 10  Multiple Choice  2.5 Points

Question: A 54-year-old woman is admitted to the hospital and scheduled for bypass surgery. The cardiothoracic surgeon decides to use the internal thoracic artery as the bypass vessel. This vessel arises from the

Answer:  brachiocephalic artery.
common carotid artery.
subclavian artery.
axillary artery.
arch of the aorta.

Question 11  Multiple Choice  2.5 Points

Question: A physician examines a 75-year-old man with symptoms of a thrombosis of the coronary sinus. The patient probably has decreased drainage from all of the following venous channels EXCEPT for the

Answer:  anterior cardiac veins.
small cardiac vein.
middle cardiac vein.
great cardiac vein.

Question 12  Multiple Choice  2.5 Points

Question: During the autopsy of a 70-year-old man, a large embolus was found in the brain. This embolus could have formed in the

Answer:  inferior vena cava.
coronary sinus.
left coronary artery.
pulmonary veins.
circumflex branch of the left coronary artery.

Question 13  Multiple Choice  2.5 Points

Question: A 10-year-old boy was diagnosed with osteosarcoma (malignant bone tumor) of the seventh and eighth thoracic vertebral bodies. The tumor was expanding anteriorly and could compress all of the following EXCEPT

Answer:  preganglionic sympathetic axons.
general visceral afferent fibers.
sympathetic chain ganglia.
axons whose cell bodies are in the intermediolateral cell column of the spinal cord.
axons which travel to the abdomen.
Question 13  Multiple Choice  2.5 Points

Question: A chest scan of a 55-year-old man revealed a large aneurysm of the first part of the descending thoracic aorta at the level of the root of the lung. This ballooning aneurysm could directly compress all of the following structures EXCEPT for the

Answer: 
- vagus nerve.
- left recurrent laryngeal nerve.
- pulmonary artery.
- pulmonary veins.
- primary bronchus.

Question 14  Multiple Choice  2.5 Points

Question: Herpes zoster (shingles) is an acute localized inflammatory disease of a dermatomal segment of the skin. It is the result of reactivation of latent varicella zoster virus that has been present in the dorsal root ganglia neuronal cell bodies since a childhood infection with chickenpox. In a man, an eruption of shingles, limited to the dermatome associated with the left nipple, would result from herpes zoster virus infecting a dorsal root ganglion associated with spinal cord level

Answer: 
- T-2.
- T-3.
- T-4.
- T-5.
- T-6.

Question 15  Multiple Choice  2.5 Points

Question: During surgery to remove a malignant growth from the posterior wall of the esophagus, a plexus of nerve fibers was also removed. Most of these fibers arise from a nerve that

Answer: 
- travels posterior to the root of the left lung.
- provides sympathetic innervation to the abdomen.
- crosses anterior to the arch of the aorta.
- gives off a recurrent laryngeal branch in the neck.
- travels anterior to the root of the right lung.

Question 16  Multiple Choice  2.5 Points

Question: While on a clerkship in the Radiology Department, you are asked to identify structures in an MRI image that is a cross section at the level of the body of the 4th thoracic vertebrae. You know that you should be able to point out all of the following EXCEPT for the

Answer: 
- aortic arch.
- superior vena cava.
- right sternocavicular articulation.
- trachea.
- azygos vein.

Question 17  Multiple Choice  2.5 Points

Question: While having coffee at the hospital on a Saturday morning, a colleague mentions to you that she has a patient with a very unusual murmur of the aortic valve. During rounds, you visit that patient and, to hear the aortic murmur, you place the receiver of your stethoscope on the skin covering the area below marked
Multiple Choice

Question: While walking one evening, a 23-year-old man was shot at close range with a small caliber bullet that passed directly horizontally and posteriorly through the area at the tip of the arrow (shown below). He was taken immediately to a nearby hospital. On admission to the emergency department, he was unconscious and in shock. The trauma team worked quickly because of a fear that he would die as a result of a possible laceration of his thoracic duct. accessory hemiazygos vein. brachiocephalic artery. left ventricle of the heart. thoracic aorta.

Multiple Choice

Question: A famous ballet dancer was hit by a prop, resulting in a rib fracture in the area shown at the tip of the arrow below. If bone fragments were pushed inward by the blow, they probably penetrated the liver. middle lobe of the lung. left ventricle of the heart. costodiaphragmatic recess. transversus thoracis muscle.
Question 20  Multiple Choice  2.5 Points

Question: A 68-year-old woman had degenerative changes in the thoracic vertebral column, including symptomatic calcified overgrowths of the right side of the body of the 9th thoracic vertebra. In order to remove them, a surgeon entered the right thoracic cavity and approached the area anterolateral to the T9 vertebral body. In this area, he observed all of the following structures EXCEPT for the

Answer: right greater splanchnic nerve.
        azygos vein.
        thoracic duct.
        hemiazygos vein.
        esophagus.

Question 21  Multiple Choice  2.5 Points

Question: Coronary bypass surgery on a 56-year-old man involved dissection of structures in the left atrioventricular sulcus. During the procedure, the heart surgeon was careful not to damage the

Answer: anterior cardiac veins.
        middle cardiac vein.
        small cardiac vein.
        great cardiac vein.

Question 22  Multiple Choice  2.5 Points

Question: A 25-year-old man died following a gunshot wound to his heart. During the autopsy, the pathologist discovered that the bullet had pierced the right ventricle. He knew that all of the following structures are usually found in the right ventricle EXCEPT

Answer: trabeculae carnae.
        the crista terminalis.
        chordae tendineae.
        the septomarginal trabecula (moderator band).
        papillary muscles.

Question 23  Multiple Choice  2.5 Points

Question: A 38-year-old woman came into the emergency department clutching her chest and leaning forward. During auscultation of her chest, the doctor heard a leather-like rub consistent with pericarditis (inflammation of the pericardial sac). Quickly reviewing the features of the pericardial sac, he knew that

Answer: it is located in the anterior mediastinum.
        it is not attached to the diaphragm.
        the parietal pericardium is continuous with the epicardium.
        the fibrous layer of the pericardium is also the visceral pericardium.
        the pericardial cavity is located between the fibrous and serous pericardial layers.

Question 24  Multiple Choice  2.5 Points

Question: An MRI of the chest of a 4-year-old girl revealed a mass, approximately the size of a golf ball, attached to the posterior surface of her manubrium. All of the following statements regarding this patient are probably correct EXCEPT that the mass

Answer: compresses the thymus gland.
        reduces blood flow through the aortic arch.
        reduces venous return from the left upper limb.
        reduces coronary arterial circulation.
        is causing compression of the trachea.
Multiple Choice 2.5 Points

Question: Afferent fibers conducting the sensation of pain from the heart have their neuronal cell bodies located in the
Answer: intermedio lateral column of spinal cord levels T1-T4.
       paravertebral ganglia located at vertebral column levels T1-T4.
       dorsal root ganglia of spinal cord levels T1-T4.
       ganglia of the cervical extension of the sympathetic chain.
       ventral horn of the spinal cord at the level of T1-T4.

Multiple Choice 2.5 Points

Question: Which of the following pairs of aortic arches results from cranial-caudal folding of the embryo?
Answer: First
       Second
       Third
       Fourth
       Sixth

Multiple Choice 2.5 Points

Question: As an astute physician of the new millennium, you are examining a developing fetus using the latest imaging techniques. During your examination, you notice that the right fourth aortic arch of the fetus is missing. You suspect that the fetus will be born
Answer: with a double aortic arch that will constrict the esophagus.
       with a right subclavian artery that passes posterior to the esophagus.
       without a ductus arteriosus.
       without a right common carotid artery.
       with no abnormality of the thoracic arteries.

Multiple Choice 2.5 Points

Question: The left recurrent laryngeal nerve hooks around a derivative of the
Answer: first aortic arch.
       second aortic arch.
       third aortic arch.
       fourth aortic arch.
       sixth aortic arch.

Multiple Choice 2.5 Points

Question: Persistence of the connection between the left anterior cardinal vein and the left horn of the sinus venosus will give rise to a double
Answer: coronary sinus.
       superior vena cava.
       inferior vena cava.
       left brachiocephalic vein.
       right brachiocephalic vein.
Question 30  Multiple Choice  2.5 Points

Question: As a result of developmental changes, the thoracic duct travels

Answer: to the right of the vertebral bodies throughout its entire length.
      to the left of the vertebral bodies throughout its entire length.
      on the right side inferiorly and crosses to the left side superiorly.
      on the left side inferiorly and crosses to the right side superiorly.
      in the midline.

Question 31  Multiple Choice  2.5 Points

Question: A 7-year-old-boy has shortness of breath when he sprints during his soccer matches. Extensive nuclear imaging studies reveal that his heart is less mobile than it should be because of the absence of a transverse pericardial sinus. His abnormality developed from the persistence of the

Answer: dorsal mesocardium.
      right horn of the sinus venosus.
      left horn of the sinus venosus.
      myocardium.
      atrioventricular sulcus.

Question 32  Multiple Choice  2.5 Points

Question: During folding of the heart tube, the atria move

Answer: ventrally and caudally.
      ventrally and cranially.
      dorsally and caudally.
      dorsally and cranially.
      ventrally only.

Question 33  Multiple Choice  2.5 Points

Question: Incomplete intussusception of the right atrium most likely will result in

Answer: an absence of a superior vena cava.
      a double inferior vena cava.
      a coronary vein that drains into the left atrium.
      a right atrium whose walls are entirely smooth.
      an absence of a foramen ovale.

Question 34  Multiple Choice  2.5 Points

Question: Overlap of the ostium secundum and the foramen ovale will give rise to

Answer: an atrial septal defect.
      a ventricular septal defect.
      acardia.
      dextrocardia.
      no defect.
Question 36  Multiple Choice  2.5 Points

Question: Although there are some exceptions, an atrioventricular septal defect is often the result of the failure of a single structure to develop properly. This structure is the

Answer: septum primum.
membranous ventricular septum.
superior portion of the truncoconal swellings.
septum intermediate.
sinutrial node.

Question 36  Multiple Choice  2.5 Points

Question: Failure of the truncoconal swellings to develop in a spiral pattern will result in

Answer: transposition of the pulmonary artery and the aorta
tetralogy of Fallot.
a double-outlet left ventricle.
a persistent truncus arteriosus.
situs inversus.

Question 37  Multiple Choice  2.5 Points

Question: Your newborn infant is crying continuously. Seeing your look of concern, the nurse informs you that this crying is a good thing because it exercises the lungs. He knows that your baby's crying will increase blood flow through the lungs, causing the pressure in the left atrium to

Answer: rise, moving the septum primum against the septum secundum.
rise, moving the septum primum away from the septum secundum.
fall, moving the septum primum against the septum secundum.
fall, moving the septum primum away from the septum secundum.

Question 38  Multiple Choice  2.5 Points

Question: A characteristic of circulation in a normal 8-month-old fetus is that

Answer: blood passes from the aorta to the pulmonary trunk through the ductus arteriosus.
most of the blood returning via the inferior vena cava passes through the foramen ovale.
the head and neck are receiving relatively deoxygenated blood.
a large volume of blood is flowing through the lungs.
no blood flows in the left ventricle.

Question 39  Multiple Choice  2.5 Points

Question: The posterior swelling of the truncus arteriosus contributes to the

Answer: pulmonary valve.
aortic valve.
tricuspid valve.
bicuspid valve.
interatrial septum.
muscular interventricular septum.
Multiple Choice

Question: Congenital postdural coarctation of the aorta is less dangerous for the newborn than preductal coarctation because

Answer: a postdural coarctation never closes completely.
- a preductal coarctation typically restricts arterial flow to the brain.
- collateral vessels develop in a fetus with postdural, but not preductal, coarctation.
- a postdural coarctation opens up in response to closure of the ductus arteriosus.
- the foramen ovale typically does not close in an infant with a preductal coarctation.

Answers:
1d2a3a4b5b6a7e8e9c10a11d12c13b14c15d16c17a18c19d20d21d22b23c24d25c26a27b28
e29b30c31a32d33c34a35d36a37a38b39b40c