

YR 1 GROSS ANATOMY/EMBRYOLOGY UNIT EXAM 3 -- November 13, 1996.

CHOOSE THE SINGLE BEST ANSWER FOR QUESTIONS 1 - 42.

1. Which of the following statements regarding the pericardium is NOT CORRECT:

- A. The fibrous pericardium forms the outer layer of the pericardium
- B. The serous pericardium is composed of two layers
- C. The visceral pericardium is also known as the epicardium
- D. The transverse pericardial sinus is found between the right and left pulmonary veins
- E. The fibrous pericardium attaches to the superior surface of the diaphragm

2. Which of the following statements best describes the crista terminalis:

- A. It is a smooth part of the right atrium at the entrance of the vena cava
- B. It is a depression which represents the remains of the embryonic foramen ovale
- C. It is a muscular ridge which separates the sinus venarum from the rest of the right atrium
- D. It is an important part of the conduction system of the heart
- E. It is a non-functional valve associated with the opening of the coronary sinus

3. Occlusion of the first named branch of the right coronary artery (very close to the artery's origin) would most likely result in which of the following:
- A. An infarct (destruction) in the myocardium of the left ventricle on the posterior aspect of the heart
 - B. An infarct in the myocardium of the right ventricle on the anterior aspect of the heart
 - C. Destruction of myocardial tissue along the right margin of the heart
 - D. Destruction of the sino-atrial node
 - E. Destruction of the atrio-ventricular node
4. Which of the following is the INCORRECT statement with regard to the autonomic control of heart function:
- A. Stimulation of the vagus nerves inhibits rhythmicity of the cardiac pacemaker
 - B. Sympathetic cardiac branches (superior, middle, inferior and thoracic) are preganglionic fibers which contribute to the formation of the cardiac plexus
 - C. Stimulation of sympathetic cardiac fibers produces increases in cardiac rate and myocardial contractility
 - D. Afferent visceral reflex fibers for normal regulation of heart function follow the vagus nerves and enter the medulla oblongata
 - E. Pain fibers from the heart follow the sympathetic cardiac branches
5. In regard to the posterior mediastinum all the following are contents EXCEPT the:
- A. Esophagus
 - B. Vagus nerves
 - C. Thoracic duct
 - D. Trachea
 - E. Azygos vein

6. In regard to the superior mediastinum which of the following relationships is INCORRECT:
- A. The left brachiocephalic vein is anterior to the roots of the brachiocephalic, left common carotid and left subclavian arteries
 - B. The right vagus nerve is to the right of the trachea and brachiocephalic artery and posterior to the superior vena cava and pulmonary root
 - C. The esophagus is posterior and to the left of the trachea and posterior and to the right of the arch of the aorta
 - D. The superior vena cava is to the right of the arch of the aorta and anterior to the right pulmonary artery
 - E. The thoracic duct courses anterior to the esophagus and between the trachea and right subclavian artery
7. In regard to the esophagus which of the following statements is INCORRECT:
- A. It exhibits three constrictions, one just inferior to the cricopharyngeus, a second, where the left primary bronchus crosses it anteriorly and third, at the gastroesophageal junction where the esophagus traverses the thoracic diaphragm at the esophageal opening
 - B. It is related posteriorly to the left atrium and oblique sinus of the pericardium
 - C. It is also related to the thoracic aorta which lies to the left of the esophagus. Inferiorly the esophagus crosses the aorta anteriorly, and then traverses the diaphragm at the esophageal hiatus
 - D. The right and left vagus nerves, inferior to the pulmonary root divide into anterior and posterior divisions which form anterior and posterior vagal trunks which then lie anterior and posterior to the inferior end of the esophagus. Esophageal branches then enter and innervate the esophagus
 - E. The esophagus does not receive any sympathetic innervation

8. Regarding the lungs and related structures, all of the following are CORRECT EXCEPT:
- A. Pleural projections from anterior to posterior relate to: the sternum near the midline; the costal margin; the 8th rib in the midclavicular line; the 10th rib in the midaxillary line; and the 12th thoracic vertebra posteriorly
 - B. The medial (or mediastinal) surface of the left lung relates to the aorta, left subclavian artery, trachea, esophagus, heart, and thoracic vertebrae
 - C. Each pulmonary artery passes into the hilum of the lung posterior to its accompanying bronchus
 - D. The inferior lobe of each lung usually enters the costodiaphragmatic recess during deep inspiration
 - E. The costodiaphragmatic recesses may relate to the kidneys
9. Which of the following is the INCORRECT statement with regard to the autonomic control of respiratory function:
- A. Preganglionic sympathetic cell bodies are localized in the intermediolateral cell column at T1-T5 spinal cord levels
 - B. Stimulation of sympathetic nerves produce inhibition of bronchiolar smooth muscle and decreased secretion of pulmonary mucous glands
 - C. Norepinephrine, released from sympathetic postganglionic terminals, binds β_2 adrenergic receptors on smooth muscle membrane
 - D. Afferent fibers from stretch receptors in the alveoli follow sympathetic nerves to the spinal cord
 - E. Postganglionic parasympathetic neurons are entirely contained within the bronchial wall

10. Foreign objects which are aspirated into the lungs are usually found in the right lung because:
- A. The right main bronchus is more nearly vertical than the left main bronchus
 - B. The right lung has more lobes
 - C. The right lung has more bronchopulmonary segments
 - D. The right primary bronchus is shorter than the left
 - E. The left primary bronchus is narrower due to the pressure of the left pulmonary artery
11. In regard to the vessels of the lungs and bronchi, which of the following is CORRECT:
- A. The pulmonary veins follow the bronchial tree while the pulmonary arteries are intersegmental
 - B. The bronchial arteries carry unoxygenated blood
 - C. The bronchial veins drain the first few divisions of the bronchi into the azygos system, while the rest of the bronchi and the pulmonary tissue drain into the pulmonary veins
 - D. The pulmonary arteries carry oxygenated blood
 - E. The pulmonary veins carry unoxygenated blood
12. All of the following vessels either directly supply or drain the intercostal spaces EXCEPT the:
- A. Thoracic aorta
 - B. Internal thoracic artery
 - C. Azygos vein
 - D. Superior epigastric vein
 - E. Musculophrenic artery

13. In regard to the rectus sheath which of the following statements is INCORRECT:
- A. It is formed by the splitting and fusion of the aponeuroses of the external and internal abdominal oblique and transversus abdominis muscles
 - B. It consists of an anterior and a posterior lamina enclosing the rectus abdominis muscle
 - C. Its anterior lamina is pierced by the anterior cutaneous branches of the thoracoabdominal nerves
 - D. Its posterior lamina extends inferiorly and attaches to the pubic crest and pubic symphysis
 - E. The superior and inferior epigastric vessels enter the sheath posterior to the rectus abdominis muscle and anastomose with each other
14. Which of the following matches is INCORRECT:
- A. Semilunar line -- rectus abdominis
 - B. Arcuate line -- posterior rectus sheath
 - C. Conjoined tendon -- fused aponeuroses of internal abdominal oblique and transversus abdominis muscles
 - D. Internal abdominal oblique muscle -- middle fascia (cremasteric muscle and fascia)
 - E. Transversus abdominis muscle -- internal fascia

15. In regard to the anterior abdominal wall which of the following statements is INCORRECT:
- A. The thoracoepigastric vein is an anastomotic channel between the superior and inferior caval systems
 - B. Its extent is superiorly to the costal margin and xiphoid process of the thoracic wall, laterally to the margin of the quadratus lumborum, and inferiorly to the ilium and pubis
 - C. Its lymphatic drainage is superiorly to the axillary nodes and inferiorly to the inguinal nodes located along the inguinal ligament
 - D. The wall, except for the inguinal region is innervated by L1 and L2 lumbar nerves
 - E. Its neurovascular bundles are typically located between the internal abdominal oblique and transversus abdominis muscles
16. In regard to a direct inguinal hernia which of the following statements is INCORRECT:
- A. The hernia protrudes through the inguinal triangle
 - B. It acquires peritoneum, extra peritoneal connective tissue, transversalis fascia, conjoint tendon (if present), external abdominal oblique fascia and aponeurosis and subcutaneous tissue
 - C. It acquires the coverings of the spermatic cord
 - D. It seldom enters the scrotum
 - E. Its course is medial to the inferior epigastric artery

17. In regard to the inguinal region which of the following statements is INCORRECT:
- A. The posterolateral wall of the inguinal canal is the conjoined tendon
 - B. The lateral border of the inguinal triangle is the inferior epigastric artery
 - C. The superficial inguinal ring is a triangular slit in the aponeurosis of the external abdominal oblique muscle
 - D. The inguinal ligament is the inferior boundary of the inguinal region
 - E. The deep inguinal ring is the mouth of the evaginated transversalis fascia
18. Choose the INCORRECT statement about the fascia of the posterior abdominal wall:
- A. The thoracolumbar fascia is derived laterally from the aponeurosis of the transversus abdominis muscle
 - B. Infections contained within the iliopsoas fascia can spread to the femoral triangle
 - C. The thoracolumbar fascia splits medially into three layers to surround the posterior abdominal and back muscles
 - D. The quadratus lumborum fascia is formed by the middle and posterior layers of the thoracolumbar fascia
 - E. The iliopsoas fascia is continuous with the fascia of the quadratus lumborum muscle and the transversalis fascia

19. Choose the INCORRECT statement about nerves associated with the posterior abdominal wall:
- A. The lumbar plexus is formed by the ventral rami of L1 to L4 and is found within the substance of the psoas major muscle
 - B. The genital branch of the genitofemoral nerve enters the deep inguinal ring
 - C. The obturator nerve descends along the medial border of the psoas major muscle
 - D. The femoral nerve enters the thigh by passing deep to the inguinal ligament
 - E. The lumbosacral trunk is derived from the ventral rami of L5 and S1
20. With regard to the abdominal cavity, all of the following statements are correct EXCEPT:
- A. It contains the peritoneal cavity
 - B. It contains peritoneal organs
 - C. It does not contain retroperitoneal organs
 - D. It has a roof, but no floor
 - E. It contains the peritoneum
21. Regarding the stomach and related structures, all of the following are CORRECT EXCEPT:
- A. The fundus is the most superior portion and is in contact with the left dome of the diaphragm
 - B. Its blood supply includes: the left gastric artery and branches of the common hepatic and splenic arteries
 - C. In as much as pain impulses from the stomach travel with the vagus nerves, a complete vagotomy will relieve such symptoms (as resulting from a gastric ulcer)
 - D. Its lymphatic drainage ultimately reaches the celiac lymph nodes (located at the origin of the celiac trunk)
 - E. Tributaries of the hepatic portal vein which drain the stomach may include direct branches, the superior mesenteric vein and the splenic vein

22. With regard to the liver all of the following statements are INCORRECT EXCEPT:
- A. Its primary blood supply is provided by the common hepatic artery
 - B. Its common hepatic artery travels in the anterior wall of the omental bursa
 - C. Its venous drainage is primarily via the portal vein
 - D. Vessels supplying it with blood enter exclusively via the porta hepatis
 - E. The portal vein drains into the inferior vena cava
23. Regarding the biliary system, all of the following are CORRECT EXCEPT:
- A. The hepatopancreatic ampulla opens into the descending portion of the duodenum
 - B. In its course, the bile duct passes posterior to both the superior part of the duodenum and the head of the pancreas
 - C. The left hepatic duct drains the region of the liver supplied by the left branch of the portal vein
 - D. When the hepatopancreatic sphincter contracts, bile cannot enter the cystic duct
 - E. The bile duct is located in the free edge of the lesser omentum
24. With regard to the spleen, all of the following statements are CORRECT EXCEPT:
- A. Its vein is a tributary of the portal vein
 - B. The branches of the splenic artery supplying it are end-arteries
 - C. It may normally be palpated inferior to the left costal margin
 - D. It is related to the costodiaphragmatic recess
 - E. It is related to the left colic flexure

25. With regard to the superior part of the duodenum, all of the following statements are CORRECT EXCEPT:
- A. The proximal half of its superior part has no mesentery
 - B. It is related to the gallbladder
 - C. The inferior vena cava is posterior to it
 - D. The distal half of its superior part has no mesentery
 - E. It is related to the neck of the pancreas
26. Which of the following is the CORRECT statement with regard to the autonomic innervation of the upper GI tract?
- A. Preganglionic parasympathetic cell bodies are located in the nodose ganglion of the vagus
 - B. Postganglionic parasympathetic axon terminals in the GI wall release norepinephrine
 - C. Stimulation of the greater splanchnic nerve produces increased gastric secretion
 - D. Sympathetic fibers in the greater splanchnic nerve are postganglionic only
 - E. Stimulation of the vagus nerve increases the rate of peristaltic contractions
27. Which of the following is the CORRECT statement with regard to the enteric nervous system in the wall of the gastrointestinal (GI) tract:
- A. Intrinsic activity in the enteric plexus can initiate peristaltic motility without a contribution from extrinsic autonomic fibers
 - B. Postganglionic parasympathetic cell bodies are located in the celiac ganglia
 - C. Stimulation of the greater splanchnic nerve will result in increased contractility of the GI smooth muscle
 - D. Mechanoreceptors in the enteric plexus are activated in response to constriction of the GI wall
 - E. The majority of pain fibers from the GI wall follow the vagus nerves to the medulla oblongata

28. All of the statements about the renal pelvis and ureter are CORRECT EXCEPT:
- A. The renal pelvis is situated within the renal sinus
 - B. The renal pelvis is usually surrounded by perirenal fat
 - C. The ureter descends retroperitoneally on the anterior surface of the psoas major muscle
 - D. The ureter passes posterior to the gonadal vessels and anterior to the external iliac artery
 - E. The ureter forms within the renal sinus
29. Choose the INCORRECT pairing of structures and where they pass through the diaphragm:
- A. Vagal trunks -- esophageal hiatus
 - B. Thoracic duct -- aortic hiatus
 - C. Subcostal nerves -- medial arcuate ligaments
 - D. Sympathetic trunks -- crura or medial arcuate ligaments
 - E. Hemiazygos vein -- posterior to the left crus
30. With regard to the pancreas all of the following statements are CORRECT EXCEPT:
- A. Its body is related to the splenic vein
 - B. It is part of the bed of the stomach
 - C. Its tail is in the gastrosplenic ligament
 - D. It lies posterior to the omental bursa
 - E. Its tail usually contacts the hilum of the spleen

31. All of the following statements about the suprarenal glands are CORRECT EXCEPT:
- A. The suprarenal glands receive their blood supply from the inferior phrenic arteries, the abdominal aorta and the renal arteries
 - B. Cells of the suprarenal medulla are modified post-ganglion parasympathetic neurons
 - C. Cells of the suprarenal medulla release epinephrine and norepinephrine
 - D. The suprarenal glands are separated from the superior poles of the kidneys by renal fascia
 - E. Preganglionic sympathetic fibers to the suprarenal gland travel in the greater splanchnic nerve
32. All of the following statements about the ureters are CORRECT EXCEPT:
- A. Visceral pain from the ureters is often due to the presence of calculi
 - B. The left ureter is longer than the right ureter
 - C. Referred pain from the ureters can be felt in the epigastric region
 - D. The ureters can receive their blood supply from the renal arteries, the abdominal aorta, the gonadal arteries and the common iliac arteries
 - E. The ureters are covered anteriorly by parietal peritoneum
33. With regard to the greater omentum, all of the following statements are CORRECT EXCEPT:
- A. It is composed of four layers of peritoneum
 - B. The gastrocolic ligament is part of it
 - C. The hepatogastric ligament is part of it
 - D. The gastrosplenic ligament is part of it
 - E. The gastrophrenic ligament is part of it

34. All of the following statements describe examples of portal-systemic anastomoses EXCEPT:
- A. Paraumbilical veins located in the falciform ligament anastomose with subcutaneous veins in the anterior abdominal wall
 - B. Veins in the bare area of the liver anastomose with the veins of the diaphragm and the right internal thoracic vein
 - C. Middle rectal veins anastomose with inferior rectal veins
 - D. Tributaries of the splenic and pancreatic veins anastomose with the left renal vein
 - E. Esophageal tributaries of the left gastric vein communicate with the azygos vein via anastomoses with the esophageal veins

QUESTIONS 35 - 36 ARE BASED ON THE X-RAY BELOW.

35. The parts of the colon which derive their parasympathetic innervation from spinal cord segments S2-S4 are labeled:
- A. A and C
 - B. A and H
 - C. T and S
 - D. H and T
 - E. D and G
36. Parts of the colon which are usually retroperitoneal in position are labeled:
- A. A and T
 - B. T and S
 - C. A and D
 - D. T and G
 - E. G and D

The figure is a transverse section through the abdomen at the level of the omental bursa as viewed in a CT or MR image as though you are viewing the section from below. Select the option (A-M below) which best fits the description number 37.

37. In a nonobese individual, a point on the skin 2.5 centimeters below the umbilicus and slightly to the left of midline indicates the level of bifurcation of which labelled structure?

THE QUESTION, NUMBERED 38 IS BASED ON THE ILLUSTRATION BELOW.

38. Site where pain of acute appendicitis usually occurs is labelled:
- A. A
 - B. B
 - C. C
 - D. D
 - E. E

This diagram is a transverse section through the thorax at the level of the eighth thoracic vertebra. It is depicted in the CT format as though you are viewing the section from below.

39. The sounds from this structure are heard most distinctly near the left sternal border in the 5th or 6th intercostal space.
40. This structure connects with the left ascending lumbar, left renal, left subcostal and left lower intercostal veins.

MATCHING ITEMS

In each of the following groups there are two numbered lists. Mark on the answer sheet in the line corresponding to each question number in the lower list (41-42) the letter of the related item of the upper list.

DIRECTIONS: Select the option (A-T below) which best fits the descriptions numbered 41-42.

- A. Celiac trunk
- B. Common hepatic artery
- C. Gastroduodenal artery
- D. Iliocolic artery
- E. Inferior mesenteric artery
- F. Left colic artery
- G. Left gastric artery
- H. Left renal artery
- I. Left gastro-omental (epiploic) artery
- J. Middle colic artery
- K. Proper hepatic artery
- L. Right colic artery
- M. Right gastric artery
- N. Right gastro-omental (epiploic) artery
- O. Sigmoid arteries
- P. Splenic artery
- Q. Supraduodenal artery
- R. Superior mesenteric artery
- S. Superior pancreaticoduodenal artery
- T. Superior rectal artery

- 41. The appendicular artery is a branch of this structure.

- 42. The paraduodenal fold contains the inferior mesenteric vein and this artery (or one of its branches).