

Biology 255 — Human Anatomy

Third Exam

Please print your name on the back of the last page of this exam. Read the instructions preceding each section carefully, and follow the instructions completely.

You must answer all of the questions on this exam.

This exam has 104 total possible points. Because, on average, an exam this size will have 1 to 3 aberrant objective questions, this exam will be graded on a 100-point scale.

Section 1: Organs of the abdominal cavity. Multiple choice. Place the most appropriate letter in the space provided. (2 points each)

- _____ 1. Which of the following statements about the small intestine is/are correct?
- a) The duodenum has a dual relationship with the peritoneum, with the initial segment being secondarily retroperitoneal and the terminal segment being intraperitoneal.
 - b) Some portion of the small intestine would be in a close relationship with the head of the pancreas.
 - c) The duodenum is found to go from left to right. The initial portion of the duodenum runs superiorly before going from left to the right.
 - d) The pancreatic duct and the cystic duct always empty the contents of the pancreas and gall bladder (respectively) independently and directly into the duodenum.
 - e) None of the above are correct (or, in other words, all of the above are *incorrect*).
- _____ 2. Which of the following statements about the small intestine is/are correct?
- a) The small intestine possess villi, plica circularis and haustra to increase its surface area.
 - b) The small intestine has three segments: duodenum, jejunum and ileum. The jejunum and ileum are both secondarily retroperitoneal.
 - c) The jejunum is the portion of the small intestine that communicates directly with the cecum of the colon.
 - d) The pyloric sphincter is found within the duodenum of the small intestine.
 - e) More than one of the above are correct.
 - f) None of the above are correct.

- _____ 3. Which of the following statements about the spleen is/are correct?
- a) found within the left hypochondrium of the abdominal cavity;
 - b) functionally the spleen is part of the immune (lymphoid) system;
 - c) would be in close proximity to the tail of the pancreas;
 - d) intraperitoneal;
 - e) more than one of the above are correct;
 - f) all of the above are correct.
- _____ 4. Which of the following are specializations of the colon that serve to increase surface area for absorption?
- a) plica circularis;
 - b) villi;
 - c) microvilli;
 - d) haustra;
 - e) taeniae coli;
 - f) more than one of the above;
 - g) none of the above.
- _____ 5. Which of the following structures are *not* found in association with the stomach?
- a) parietal cells;
 - b) chief cells;
 - c) mucous cells;
 - d) pepsinogen;
 - e) HCl (hydrochloric acid);
 - f) rugae;
 - g) haustra;
- _____ 6. Which of the following statements about the subdivisions of the colon is/are correct?
- a) The cecum is intraperitoneal.
 - b) The cecum would be found within the left hypochondrium.
 - c) The first flexure of the large intestine would be found within the right hypochondrium region of the abdomen.
 - d) The second flexure of the large intestine would be found within the left hypochondrium region of the abdomen.
 - e) The ascending colon is secondarily retroperitoneal.
 - f) More than one of the above is correct
 - g) All of the above are correct.

- _____ 7. Which of the following statements about the pancreas, liver, gallbladder and associated ducts is/are *incorrect*?
- a) The liver is intraperitoneal.
 - b) The pancreas is found in contact with the duodenum and spleen.
 - c) The bulk of the liver would be found within the right hypochondrium of the abdomen.
 - d) The cystic duct exits the gall bladder.
 - e) The right and left lobes of the liver are joined by the falciform ligament.
 - f) More than one of the above are incorrect.
 - g) None of the above are incorrect (i.e. all of the above are correct.)
- _____ 8. Which of the following statements about the subdivisions of the colon is/are *incorrect*?
- a) The ascending colon is secondarily peritoneal.
 - b) The transverse colon starts out intraperitoneal, and then becomes secondarily retroperitoneal.
 - c) The descending colon is secondarily retroperitoneal.
 - d) More than one of the above are incorrect.
 - e) None of the above are incorrect (i.e. they are all correct).
- _____ 9. Relax, and collect two free points by drawing your very best picture of a Delta Chi sorority member in the space provided.

Section 2: Vasculature of the abdominal and pelvic cavities. Answer the following questions in the space provided. Each question is worth the number of points indicated.

10. The celiac trunk subdivides into three vessels. Give the anatomical names of those vessels. (6 points)

11. List the structures of the digestive system supplied with blood by the superior mesenteric artery. (12 points)

12. List the structures of the digestive system supplied with blood by the inferior mesenteric artery. (6 points)

Section 3: Abdominal musculature and general information about abdominal and pelvic cavities. If the following statements are true place a (+) in the space provided. If the statement is false place a (O) in the space provided. (2 points each)

- _____ 13. All organs of the abdominal cavity have an identical relationship with the peritoneum.
- _____ 14. All organs of the pelvic cavity have an identical relationship with the peritoneum.
- _____ 15. The abdominal cavity has a connective tissue lining similar to that seen in the thoracic cavity. The connective tissue layer that lines the abdominal cavity is termed the visceral peritoneum, while that found covering the organs of the abdominal cavity is termed the parietal (also termed serosal) peritoneum.
- _____ 16. The superficial anatomy of the abdominal and pelvic cavities is subdivided into 9 regions: epigastric, right and left hypochondria, umbilical, right and left lumbar, hypogastric and right and left iliac. Of these 9 regions, the one that would be found superficial to the spleen would be the right hypochondrium.
- _____ 17. The origins of the rectus abdominis are the pubic crest, pubic tubercle and pubic symphysis. The insertions are ribs 5-7 and the xiphoid process of the sternum.
- _____ 18. The external oblique of the anterolateral wall musculature of the abdomen has its origin on the ribs 5 to 12 and inserts onto the iliac crest and the linea alba.
- _____ 19. The internal oblique inserts onto the lower 3-4 pairs of ribs, costal cartilages of ribs 7-9, the linea alba and the pubic bone (pubic crest). The origin of the internal oblique is the iliac crest and the inguinal ligament.
- _____ 20. The peritoneum and its mesenteries serve several important functions. One of these functions is to provide a pathway for blood vessels and nerves to get to and from an organ of abdominal cavity.
- _____ 21. The anterolateral muscles of the abdominal wall serve to support the abdominal viscera and compress the abdomen.

- _____ 22. As was mentioned in your textbook (and as shown below), a good way to envision the peritoneum is that of a fist in a balloon. The outer wall of the balloon (furthest from the fist) would be similar to the visceral layer of the peritoneum, with the inner wall (that closest to the fist) would be the parietal peritoneum. The fist would be similar to an organ found within the abdominal cavity that has some relationship to the peritoneum.



- _____ 23. An organ that is secondarily retroperitoneal has no relationship with the peritoneum, and never had one at any time.
- _____ 24. All of the muscles of the anterior and lateral abdominal walls flex the abdomen.

Section 4: Organs of the pelvic cavity. If the following statements are true place a (+) in the space provided. If the statement is false place a (O) in the space provided. (2 points each for a total of 10 points)

- _____ 25. The male urethra is subdivided into three segments. The portion within the center of the male penis is termed corpus spongiosum, and this contains the penile (cavernous) urethra.
- _____ 26. The clitoris is the female erectile organ. It contains two corpora spongiosa, similar to the male erectile organ.
- _____ 27. The round ligament of the female anchors the uterus to the external body wall after passing through the inguinal canal.
- _____ 28. Each uterine tube lies in the upper part of the broad ligament, which serves to help hold the uterine tube (and the uterus) in place.
- _____ 29. The voluntary sphincter of the male urethra would be found within the membranous urethra.

Section 5: Terminology. Define the following terms in the space provided. (8 points)

30. rostral

31. proximal

32. visceral

33. eversion

Section 6: Give the word that best fits the following definition. (10 points)

34. A line, marked by either a low crest or a depression

35. An articular eminence

36. Term used to describe an organ that is covered only on the anterior surface by the peritoneum

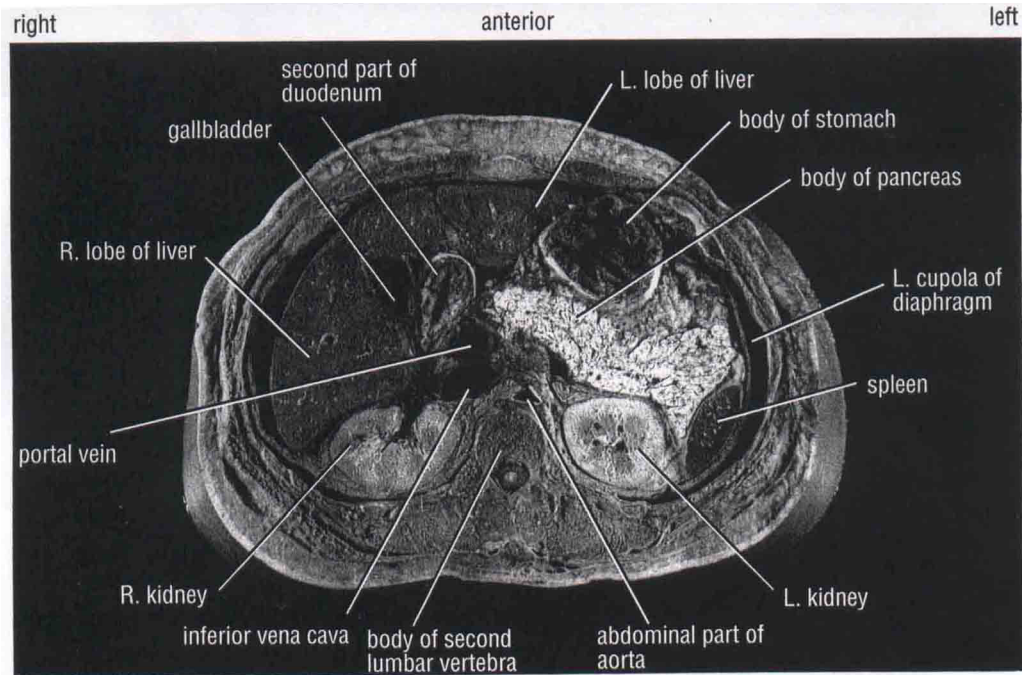
37. A pulley-shaped structure

38. A blind pouch or sac

39. Term used by to describe an organ that is covered on all sides by the peritoneum

Section 7: Diagram interpretation (8 points)

Throughout this term you have been using Cyber-Anatomy and its various test functions, scan functions etc. In addition, you have been looking at various images and figures in your textbook. Below is a CT scan of the abdomen. Answer the two questions below that relate to this image.



40. Yes or No? The CT scan above is anatomically correct? (4 points)

42. Explain your answer to #40 above (4 points)