LE # 4: GIT Gross & Histology, Accessory Glands of the GIT, Urinary System Gross & Histology, Radiology of the Abdomen, & Endocrine system

Question	Choices		Answer & Rationale	
1. Which transverse abdominal plane transects the lower border of the 10th rib?	A	Interspinous	**B**	Passes through **ASIS** bilaterally
	B	Subcostal		- Inferior border of 10th costal cartilage bilaterally - **Upper border of L3**
	C	Transpyloric		- Horizontal plane halfway between xiphoid & umbilicus - Transects **tip of 9th costal cartilage** bilaterally at **L1 level**
	D	Transtubercular		- Passes through iliac tubercles bilaterally - **Body of L5**
2. A stab wound at the right upper quadrant most likely penetrated which of the following organs?	A	Esophagus	**B**	Too high
	B	Gallbladder		Found at the right upper quadrant
	C	Jejunum		Right Lower/Left Upper Quadrant (proximal ileum)
	D	Spleen		Left Upper Quadrant
3. Which of the following arises from the distal common aponeurosis of the internal oblique and transversus abdominis muscles?	A	Conjoint Tendon	**A**	The posterior wall of the inguinal canal, particularly its medial part, is reinforced by pubic attachments of the **internal oblique and transversus abdominis aponeurosis** that merge into a common tendon – the inguinal falx (conjoint tendon) – and the reflected inguinal ligament
	B	Lacunar ligament		Formed by deep fibers that passes posteriorly to attach to the superior pubic ramus, lateral to the tubercle forming the **medial boundary of the subinguinal space**
	C	Inguinal ligament		A dense band constituting most inferior part of the **external oblique aponeurosis** (inferior thickening and infolding)
	D	Pectineal ligament		Pectineal ligament (of Cooper) are the lateral fibers that run along the pecten pubis and are derived from the **external oblique aponeurosis**
4. Which abdominal wall structure marks the lower limit of the posterior rectus sheath?	A	Arcuate line	**A**	Arcuate line demarcates the **transition between the aponeurotic posterior wall of the rectus sheath** covering the superior three quarters of the rectus and the transversalis fascia covering the inferior quarter. **Below this line, there is no posterior rectus sheath**, thus you immediately have your transversus abdominis muscle.
	B	Linea alba		
	C	Linea semilunaris		
	D	Tendinous insertions		
5. Which group of lymph nodes would initially become swollen and tender due to a skin abscess at the site of appendectomy?	A	Axillary	**D**	**Axillary:** Too superior relative to the site of the appendectomy **Deep Inguinal:** Lymphatics of lower extremity The lymph from the gluteal region and the anterior abdominal wall below the level of the umbilicus drain to lateral nodes of the Superficial Inguinal Lymph Node.
	B	Deep Inguinal		
	C	Parasternal		
	D	Superficial Inguinal		

6. A clinical clerk was assisting in the surgical removal of the gallbladder of a patient with cholecystitis was asked by attending physician to name the medial border of the triangle of Calot. What is that structure?	A	Cystic Duct	**D**	**CALOT'S TRIANGLE BORDERS:** • Inferior border of the liver (superior) • Cystic duct (lateral) • Common Hepatic duct (media)
	B	Right Hepatic Duct		
	C	Common Bile Duct		
	D	Common Hepatic Duct		
7. A ruptured appendicitis would most commonly spill colonic content directly into which peritoneal compartment?	A	Left infracolic space	**D**	Relative to the appendix' anatomical location. The fluid originating from perforated ulcers travels through the paracolic gutter to the right iliac fossa, causing peritoneal irritation in that quadrant.
	B	Omental Bursa		
	C	Pelvic Cavity		
	D	Right Paracolic Gutter		
8. Which posterior abdominal wall muscle is a thick muscular sheet that lies adjacent to the lumbar transverse process?	A	iliacus	**C**	Triangular muscle that lies along the lateral side of the inferior part of the psoas major
	B	Psoas		Lateral to the lumbar vertebra
	C	Quadratus lumborum		"Forms a thick muscular sheet in the posterior abdominal wall that **lies adjacent to the lumbar transverse process and is broader inferiorly**"
	D	Transversus abdominis		Oriented transversely to compress the abdominal contents
9. Which of the following structures forms the floor of the inguinal canal?	A	Conjoint Tendon	**C**	• **Anterior Wall** - EO Aponeurosis, and laterally reinforced by IO Muscle • **Posterior Wall** - Transversalis Fascia, and medially reinforced by Conjoint Tendon • **Roof** - Transversus Abdominis, and IO Muscle • **Floor** - Inguinal Ligament, and Lacunar Ligament
	B	External Oblique Aponeurosis		
	C	Lacunar Ligament		
	D	Transversalis Fascia		
10. Which umbilical fold covers the remnant of the umbilical arteries?	A	Lateral	**B**	Covers inferior epigastric artery and accompanying vessels
	B	Medial		
	C	Median		Covers remnant of urachus
11. The cremasteric muscle is derived from which anterolateral abdominal wall layer	A	Internal Oblique Muscle	**A**	
	B	Scarpa fascia		Not part of the anterolateral abdominal wall layer
	C	Transverasalis fascia		Internal spermatic fascia is derived from the transversalis fascia
	D	Transversus abdominis		Not part of the anterolateral abdominal wall layer
12. The opening of the lesser sac lies at the border of which peritoneal reflection?	A	Gastrocolic Ligament	**D**	**Epiploic Foramen** - space that connects the greater sac and the lesser sac. It's related to the hepatoduodenal ligament.
	B	Gastrohepatic Ligament		
	C	Gastrosplenic Ligament		
	D	Hepatoduodenal Ligament		
13. The upper half of the rectus abdominis muscle is mainly supplied by which artery?	A	Superior epigastric artery	**A**	Supplies the upper half of the rectus abdominis muscle
	B	Inferior epigastric artery		Lower half of the rectus abdominis muscle
	C	Superficial epigastric artery		Supplies the superficial tissue of the abdominal wall

	D	Superficial circumflex iliac artery		Smallest cutaneous branch of the femoral artery; contributes to the arterial supply of the anterolateral abdominal wall and groin
14. Which abdominal layer surrounds the anterior and posterior abdominal wall?	A	External oblique	D	Flat muscles that are found in the anterolateral abdominal wall and whose aponeurosis is directed anteriorly and medially to form the rectus sheath that encloses the rectus abdominis muscle
	B	Internal oblique		
	C	Transversus abdominis		
	D	Transversalis Fascia		The only abdominal layer in the given choices which is continuous and lines both the anterior and posterior abdominal wall
15. A dentist noted that a 6 year old child had an eruption of its first permanent tooth. Which tooth erupts at this age?	A	First Molar	A	The first permanent teeth to erupt in the oral cavity are the **first molars** at **around 6 years old**. Eruption of permanent teeth (upper) • Central incisor: 7-8 yrs • Lateral incisor: 8-9 yrs • Canine: 11-12 yrs • First premolar: 11-12 yrs • Second premolar: 10-12 yrs • **First molar: 6-7 yrs** • Second molar: 12-13 yrs • Third molar (wisdom tooth): 17-21 yrs
	B	Lateral incisor		
	C	First premolar		
	D	Canine		
16. How far from the incisor should an esophagoscope be inserted to reach the level of the left main bronchus?	A	15 cm	C	• Cervical Constriction- about 15 cm from incisors • Thoracic/Broncho-aortic constriction - Arch of the aorta (22.5 cm from the incisors) - **Left main bronchus** (**27.5 cm** from the incisors) • Diaphragmatic constriction- about 40 cm from the incisors
	B	22.5 cm		
	C	27.5 cm		
	D	40 cm		
17. Which extrinsic muscle of the tongue protracts the tongue anteriorly and deviates it to the opposite side?	A	Genioglossus	A	The primary function of the genioglossus muscle is to **protrude the tongue anteriorly and deviate the tongue to the opposite side**. It also aids in swallowing as it will create a passage to the GIT. When the left and right genioglossus muscles act together, they will depress the middle part of the tongue.
	B	Hyoglossus		The hyoglossus acts to both **depress and retract the tongue**.
	C	Palatoglossus		The palatoglossus muscle functions to **elevate the posterior portion of the tongue**. It also draws the soft palate inferiorly, thereby narrowing the diameter of the oropharyngeal isthmus.
	D	Styloglossus		The styloglossus muscle acts to **lift the lateral edges and to retract the tongue**.
18. Which structure increases the mucosal surface area of the stomach and allows it to distend to accommodate food?	A	Gastroesophageal junction	D	
	B	Magenstrasse		The Magenstrasse, or "street of the stomach", is a long narrow tube fashioned from the lesser curvature, which conveys food from the esophagus to the antral Mill.
	C	Pyloric sphincter		
	D	Ruga		The gastric folds (or gastric rugae) are coiled sections of tissue that exist in the mucosal and submucosal layers of the stomach. They provide elasticity by allowing the stomach to expand when a bolus enters it.
19. Which of the following	A	Incisive fossa	B	

foramina transmits the palatine branches of the maxillary nerve supplying the mucosa of the hard palate?	B	Greater palatine foramen		The greater palatine nerve emerges on the oral surface of the palate through the greater palatine foramen and travels forward within a groove on the inferior surface of the hard palate. It innervates the mucosa and glands of the hard palate, along with adjacent gingiva
	C	Lesser palatine foramen		
20. Lymph from upper lip at the midline will drain directly into which group of nodes?	A	Submandibular	**A**	The lymphatic drainage of both the upper and lower lips is primarily to the **submandibular group of lymph nodes**. To a lesser extent, drainage may go to submental intraparotid, or internal jugular lymph nodes.
	B	Jugular		
	C	Deep cervical		
	D	Submental		
21. Which of the following statements best describes the course of the esophagus?	A	Left of the cervical vertebrae	**A**	• General direction is vertical but it presents itself with two slight curves in its course as it follows the curvatures of the vertebral column. (Refer to Figure XIV) → It starts at the midline but it deviates to the left side at the level of the root of the neck after entering the thoracic inlet. → It gradually passes to the midline again at the level of the 5th thoracic vertebra. → It deviates to the left as it passes forward to the esophageal hiatus in the diaphragm. → These general directions are important when accessing the esophagus for drainage in cases of tracheoesophageal fistula. You don't access the right side of the neck, you do it on the left side of the neck. → The esophagus can be accessed on the right side of the thorax to prevent damage/injury to the heart (left side).
	B	Anterior to the arch of the aorta		
	C	Deviates to the right, before penetrating the diaphragm		
	D	Posterior to the Descending Aorta		
22. Which gross structure represents the normal gastroesophageal junction?	A	Distal esophageal stricture	**D**	Dysphagia; abnormal narrowing of the esophagus
	B	Esophageal varix		Abnormality that occurs when blood flow to the liver is blocked often caused by scar tissue in the liver (cirrhosis)
	C	Phrenico-esophageal ligament		Refers to the attachment of the esophageal hiatus to the diaphragm; extension of the inferior diaphragmatic fascia
	D	Z-line		Z-line refers to the line where the mucosa abruptly changes into gastric mucosa from **non-keratinized stratified squamous epithelium** to **simple columnar epithelium with goblet cells**
23. Bleeding from a perforated ulcer at the pyloric antrum would most likely arise from erosion of which of the following arteries?	A	Left Gastric	**C**	Left gastric artery supplies the **cardia** of stomach
	B	Left Gastroepiploic		Left gastroepiploic artery supplies the **greater curvature** of the **body of the stomach**
	C	Right Gastroepiploic		Right gastroepiploic artery supplies **the pyloric antrum and the lower half of the gastric body**.
	D	Short Gastric		Short gastric artery supplies the **fundus** and the **upper body of the stomach**
24. Which structure marks the junction of the body and pylorus of the stomach?	A	Angular incisure	**A**	Constant notch in the lower part of the lesser curvature; junction of body and pyloric part of the stomach
	B	Cardiac notch		Acute angle between the left border of the abdominal esophagus and the fundus of the stomach
	C	Pyloric sphincter		Thick muscular wall at the terminal portion of the stomach
	D	Prepyloric vein		Ascends over pylorus to the right gastric vein; used as a landmark for identifying the pylorus

25. Which branch of the celiac trunk supplies the greater curvature of the stomach?	A	Splenic Artery	**A**	Splenic Artery supplies the body of the pancreas, spleen, and the **greater curvature** and posterior stomach body.
	B	Hepatic Artery Proper		Branches does not supply the greater curvature of stomach: • **Right Gastric Artery** - supplies the right portion lesser curvature of the stomach • **Right and Left hepatic Artery** - supplies the liver
	C	Left Gastric Artery		Supplies the distal portion of esophagus and lesser curvature of the stomach
	D	Right Gastric Artery		Supplies the right portion of the lesser curvature of the stomach
26. Which of the following is related to the POSTERIOR surface of the stomach?	A	Gallbladder	**C**	Anterior to the duodenum
	B	Right Kidney		Left Kidney is posterior to the stomach Right Kidney is posterior to the descending part of the duodenum
	C	Spleen		Posterior to the stomach
	D	Transverse colon		Caudal to the stomach
27. At what vertebral level does the esophagus enter the cardia of the stomach?	A	T9	**C**	1 Level Below IVC
	B	T10		For the Esophagus
	C	T11		The cardia of the stomach enters 1 level lower than the esophagus (T10)
	D	T12		For the Aorta
28. Both skeletal and smooth muscles can be found in the muscularis externa of which following structure	A	colon	**C**	Two layers of smooth muscle
	B	duodenum		Two layers of smooth muscle
	C	esophagus		The only one in the choices that has both smooth and skeletal muscles Upper ⅓: skeletal ms. Middle ⅓: both skeletal and smooth Lower ⅓: smooth ms.
	D	stomach		Three layers of smooth muscle
29. Which of the following veins will drain directly into SMV?	A	Left Gastric Vein	**D**	drains into the hepatic portal vein
	B	Right Gastric Vein		drains into the hepatic portal vein
	C	Left Gastro-omental Vein		drains into the splenic Vein
	D	Right Gastro-omental Vein		
30. Von Ebner glands empty into groups surrounding which of the following lingual papillae?	A	Fungiform	**C**	**Salivary (von Ebner) glands** • The ducts of these serous glands <u>empty into the deep, moatlike groove surrounding each vallate papillae</u> • This provides a continuous flow of fluid over the taste buds that are abundant on the sides of these papillae, washing away food particles • Allows the taste buds to receive and process new gustatory stimuli
	B	Filiform		
	C	Vallate		
31. Which muscular layer completely surrounds the	A	Internal oblique	**B**	Primarily located at the cardiac end of the stomach

stomach?	B	Middle circular		Middle circular muscle layer covers the whole extent of the stomach
	C	Outer longitudinal		
32. Which of the following structures in the oral cavity is lined by non keratinized stratified squamous epithelium?	A	Buccal mucosa	**A**	Lined with non-keratinized stratified squamous epithelium ● Soft palate, cheeks, floor of the mouth, pharynx ○ Contains a lot of minor salivary glands which secretes continuously to keep the mucosa wet
	B	Filiform papillae		Heavily keratinized to provide a rough surface to facilitate movement during chewing
	C	Gingiva		Keratinized stratified squamous epithelium (Dry Type) ● Needs resistance to damage or abrasion ● Prone to friction which needs more keratinization ● Masticatory mucosa
	D	Hard palate		
33. Choose the correct statement describing dentin	A	It contains type I collagen fibers	**B**	Dentin contains type II collagen fibers
	B	It is sensitive to heat and cold		
	C	It is made up of 90% calcium salts		Dentin is made up of 70% calcium salts
	D	It is harder than bone		Bone is harder than dentin
34. Which of the following substances is secreted by large round pyramidal cells each with one or two central round nuclei with eosinophilic cytoplasm seemingly in the stomach?	A	Gastrin	**B**	Gastrin is secreted by **G-cells** in the stomach and duodenum. G cells are found in the middle of gastric glands and have nuclei that are centrally located in the cell. They work in conjunction with chief cells and parietal cells.
	B	Hydrochloric Acid		Hydrochloric acid is secreted by **Parietal Cells** in the stomach. These parietal cells have large round pyramidal cells with one or two central round nuclei and an eosinophilic cytoplasm.
	C	Lysozyme		Lysozymes are excreted by **Paneth Cells**. These cells are in the small intestine and are discernible due to the eosinophilic granules they secrete at the base of the Crypts of Lieberkuhn (the invaginations lining the mucosal surface of the small intestine).
	D	Pepsinogen		Pepsinogen is secreted by **Gastric Chief Cells** in the stomach. These are the epithelial cells of the stomach and are found within the gastric gland as the base. Nuclei is basally located while their cytoplasm is basophilic with abundant rough endoplasmic reticulum and secretory granules.
35. Which of the following characterizes the epithelial lining of the esophagogastric junction from the proximal to the distal side?	A	Simple columnar → stratified squamous	**D**	The **PROXIMAL** side (esophagus) of the esophagogastric junction is lined by stratified squamous epithelium. The **DISTAL** side (stomach) is lined by simple columnar epithelium.
	B	Stratified squamous → simple columnar with goblet cells		
	C	Simple columnar with goblet cells → stratified squamous		
	D	Stratified squamous → simple columnar		
36. A patient presents with	A	Simple columnar with	**A**	Large intestine (“colonic mucosa”)

watery diarrhea because of erosion of the colonic mucosa which is normally lined by which type of epithelium?		abundant goblet cells		
	B	Simple columnar with brush border		Small intestine
	C	Stratified squamous - keratinized		Gingiva, Hard Palate
	D	Stratified squamous - non-keratinized		Esophagus
37. What are the specialized epithelial cells in the mucosa of the ileum overlying the lymphoid follicles of Peyer patches?	A	Goblet cells	**D**	Mucin producing cells, for protection and lubrication
	B	Paneth cells		Secrete lysozymes, phospholipase A2, and defensins
	C	Enteroendocrine cells		Scattered all around the intestinal mucosa
	D	M cells		overlying the lymphoid follicles of Peyer patches
38. Which segment of the GIT contains leaf-shaped villi with submucosal glands?	A	Jejunum	**B**	
	B	Duodenum		
	C	Ileum		
	D	Large intestine		
39. Which of the following cytoplasmic structures are responsible for the eosinophilia of the Paneth cells?	A	Mitochondria	**C**	The cytoplasm of Paneth cells contain large eosinophilic secretory granules.
	B	Mucin inclusion bodies		
	C	Secretory granules		
	D	Rough endoplasmic reticulum		
40. Which of the following structures is NOT part of the periodontium?	A	Alveolar bone	**B**	The **alveolar bone** has osteoblasts and osteocytes that engage in the continuous remodeling of the bony matrix.
	B	Enamel		The periodontium comprises the structures responsible for maintaining the teeth in the maxillary and mandibular bones, and includes the **cementum,** the **periodontal ligament**, and **alveolar bone** with the associated **gingiva**.
	C	Cementum		**Cementum** covers the dentin of the root and resembles bone, but it is avascular.
	D	Gingiva		The **gingiva** is firmly bound to the periosteum of the maxillary and mandibular bones.
41. Chagas disease is caused by the parasite *Typanosoma cruzi.* In this disease the digestive tract's enteric nervous system is absent or severely injured. Which layer of the wall of the GIT is affected?	A	Muscularis externa	**A**	The **muscularis or the muscularis externa** is composed of smooth muscle cells organizes as two or more sublayers. It contains the **myenteric (Auerbach) nerve plexus** between the inner circular layer and the outer longitudinal layer. This and the submucosal plexus together comprise the enteric nervous system of the digestive tract.
	B	Adventitia		The **adventitia** is a connective tissue layer that merges with the surrounding tissues and lacks mesothelium.
	C	Lamina propria		The **lamina propria** is the loose connective tissue layer that is part of the mucosa rich in blood vessels, lymphatics, lymphocytes, and smooth muscle cells, and often contains small glands.

	D	Muscularis mucosae		The **muscularis mucosae** is a thin layer of smooth muscle in the mucosal layer that separates the mucosa and the submucosa.
42. Celiac disease is a disorder of the small intestinal mucosa that causes malabsorption and can lead to damage of which of the following structures?	A	Intestinal cells	**D**	
	B	Muscularis externa		
	C	Peyer's Patches		
	D	Villi		Villi is responsible for **absorption**. Since the disease involves malabsorption, there would likely be a problem with the small intestinal villi.
43. Which part of the duodenum is the junction between the foregut and the midgut found?	A	Superior	**B**	
	B	Descending		Where the foregut ends
	C	Horizontal		
	D	Ascending		The Duodenojejunal junction/flexure is where the **duodenum** ends, and the **jejunum** begins.
44. Which of the following characteristics is distinct to the ileum rather than the jejunum?	A	Long vasa recta	**B**	**Table 4.** Jejunum v.s. Ileum [2024A] **Jejunum** / **Ileum** Begins at duodenojejunal flexure (ligament of treitz) / Ends at ileocecal junction ⅖ length / ⅗ length Occupies LUQ / Occupies RLQ Distinct plicae circulares / Plicae circulares gradually thins out & disappears Thicker/wider / Thinner/narrower Deep red color / Paler Less fatty / More fatty Long vasa recta / Short vasa recta Few large arcades / Many short arcades Few lymph nodules / Many lymph nodules (Peyers' Patches)
	B	Peyer's patches		
	C	Tall plicae circulares		
	D	Superior mesenteric artery		
45. Which of the following arteries directly supply the anal verge?	A	Inferior mesenteric artery	**C**	originates from the abdominal aorta, supplies part of gastrointestinal tract derived from the hindgut
	B	Internal iliac artery		its middle rectal branch supplies the midpart of the rectum
	C	Internal pudendal artery		its inferior rectal branch supplies the distal part of the rectum and anal canal (Table 5.9, Moore)
	D	Superior mesenteric artery		originates from the abdominal aorta, supplies the part of gastrointestinal tract derived from the midgut
46. Which of the following veins joins the Superior Mesentery Vein to form portal vein	A	Hepatic	**D**	
	B	Inferior Mesentery		
	C	Left Gastric		
	D	Splenic		Short gastric and left gastro-omental vein drains into the Splenic Vein → Which joins with the superior mesenteric vein to form the portal vein
47. Which is the most distal segment of the GI tract with venous blood draining directly into the superior mesenteric vein	A	Sigmoid colon	**D**	Part of the hindgut; is drained by the inferior mesenteric veins which drain into the splenic vein.
	B	Cecum		All part of the midgut. But the transverse colon is the most distal (Ileum → Cecum → Transverse colon). Midgut: distal ⅔ of 2nd part of duodenum to proximal transverse colon.
	C	Ileum		

	D	Transverse colon		Superior mesenteric veins - drains the entire small intestine and midgut
48. Which segment of the midgut is the first to return within the abdominal cavity during embryologic development of the cecum?	A	Cecum	**D**	About 9th-10th week, the abdominal cavity starts to develop pulling the small intestinal loops back into the belly. There is more space on the left because the liver is taking up space on the right side.
	B	Colon		
	C	Ileum		
	D	Jejunum		
49. The Ligament of Treitz marks the beginning of which intestinal segment	A	Colon	**D**	The Ligament of Treitz marks the end of the duodenum and beginning of jejunum.
	B	Duodenum		
	C	Ileum		
	D	Jejunum		
50. Which of the following arteries supply the hindgut	A	Celiac	**C**	Supplies the foregut
	B	Common iliac artery		course down each side of the body to **supply** blood to the pelvis and lower limbs
	C	Inferior mesenteric artery		
	D	Superior mesenteric artery		Supplies the midgut
51. During embryologic development, how many degrees does the midgut fully rotate?	A	90	**C**	The rotation in the midgut occurs in a counterclockwise direction when viewed from the front, and amounts to about 270° when complete. Herniation occurs (90° rotation) around the 6th week. As the midgut returns to the abdomen, there is another 180° rotation around the 10th week. By the 11th week, complete rotation of midgut is 270° counterclockwise. (180°+90°=270°)
	B	180		
	C	270		
	D	360		
52. Which of the following colonic segments is retroperitoneal in location?	A	Cecum	**B**	Intraperitoneal
	B	Descending		The Ascending and Descending Colon are Retroperitoneal **Retroperitoneal organs** → Organs that lie against the posterior body wall → Partially covered by peritoneum only on their anterior surface
	C	Sigmoid		Intraperitoneal
	D	Transverse		Intraperitoneal
53. To which segment of the gastrointestinal tract is the vitelline duct attached?	A	Cecum	**C**	Pouch = cecum
	B	Duodenum		
	C	Ileum		Junction of proximal and terminal ileum = attachment of vitelline duct (connection to yolk sac)
	D	Jejunum		
54. A malignant tumor of the descending colon would metastasize first to which preaortic group of lymph nodes?	A	Celiac	**C**	Primarily drains foregut
	B	Common iliac		Not part of the preaortic group, but in the paraaortic group

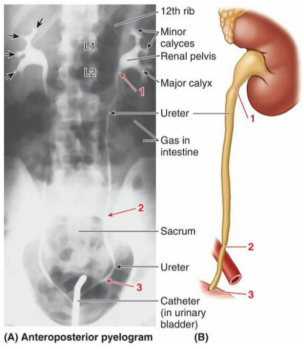
	C	Inferior mesenteric		Part of the **lymphatic drainage of the descending colon**: epiploic and paracolic lymph nodes → intermediate colic lymph node → <u>inferior mesenteric lymph node</u>
	D	Superior mesenteric		Part of the lymphatic drainage of the cecum, ascending, and transverse colon
55. Which of the following nerves provides parasympathetic innervation to the jejunum?	A	Least splanchnic nerve	**D**	Sympathetic innervation
	B	Great splanchnic nerve		Sympathetic innervation
	C	Pelvic splanchnic		Too far from the jejunum
	D	Vagus nerve		Parasympathetic innervation
56. What is the mucosal modification located in the rectum?	A	Circular folds	**C**	Located in the jejunum
	B	Rugae		Located in the stomach
	C	Transverse folds		
	D	Semilunar folds		Located in the colon
57. Which structure forms the lateral border of the cystohepatic triangle	A	Common hepatic duct	**B**	Medial boundary
	B	Cystic duct		Lateral boundary
	C	Inferior edge of the Liver		Superior Boundary
	D	Right hepatic Artery		Contents: Right Hepatic Artery, Cystic Artery, Lymph node of Lund, and other lymphatics
58. A patient is suffering from generalized jaundice and there are few engorged veins seen on the anterior abdominal wall. Which of the following portocaval anastamoses is most likely involved?	A	Rectal		Most probable manifestation = blood found in stool due to hemorrhoids
	B	Retroperitoneal		Would give Retroperitoneal varicose portacaval Anastomosis, which is the least clinically significant dilation of anastomosis among the four
	C	Esophageal		Most probable manifestation = vomiting of fresh blood
	D	Paraumbilical		a.k.a. Caput Medusae / “Medusa’s Head”; is a snake-like appearance of distended and engorged superficial epigastric vein which are seen radiating from the umbilicus across the abdomen
59. Which of the following structures lies on the anterior groove of the right sagittal fissure of the liver?	A	Gallbladder	**A**	The right sagittal fissure contains a fossa for the gallbladder anteriorly, and it continues as the groove for the inferior vena cava along the posterior surface. The groove for the inferior vena cava also extends into the diaphragmatic surface of the liver.
	B	Duodenum		
	C	Transverse colon		
	D	Biliary duct		
60. Which of the following ducts open into sublingual caruncle?	A	Parotid	**C**	<table><tr><td>Type of secretion</td><td>Purely serous</td></tr><tr><td>Name of duct</td><td>Stensen’s duct/ Parotid duct</td></tr><tr><td>Opening of duct</td><td>Parotid papilla opposite the upper 2nd molars</td></tr><tr><td>Innervation</td><td>Glossopharyngeal nerve (CN IX)</td></tr><tr><td>Histological</td><td>Branched Acinar</td></tr></table>

				Appearance |
	B	Sublingual		**Type of secretion** | Mixed, predominantly mucous **Name of duct** | Ducts of Rivinus/ Sublingual duct **Opening of duct** | Sublingual fold **Innervation** | Parasympathetic: CN VII **Histological Appearance** | Branched tubuloacinar
	C	Submandibular		**Type of secretion** | Mixed, predominantly serous **Name of duct** | Wharton's duct/ submandibular duct **Opening of duct** | Sublingual caruncle **Innervation** | Parasympathetic: CN VII **Histological Appearance** | Branched tubuloacinar
61. The secretory units of the sublingual glands are BEST classified as:	A	Mixed, Predominantly mucous	**A**	Sublingual glands/Duct of rivinus
	B	Mixed, Predominantly serous		Submandibular gland/Wharton's duct
	C	Purely mucous		None
	D	Purely serous		Parotid Gland/Stensen's duct
62. Which of the following structrues is exclusive to the pancreas?	A	Centroacinar cells	**A**	Only the pancreas have centroacinar cells
	B	Chief cells		Produced by the Parathyroid glands
	C	Ito cells		Found in the Liver
	D	Parafollicular cells		Produced by the Thyroid gland
63. Lipid accumulation are first to occur in the hepatocytes of which zone of the hepatic acinus in the liver biopsy of a 42-year-old obese male	A	Zone 1	**C**	They get the most oxygen and nutrients and can most readily carry out functions requiring oxidative metabolism such as protein synthesis.
	B	Zone 2		This is the intervening zone between zone 1 and 3. They have an intermediate range of metabolic functions between those in zones 1 and 3.
	C	Zone 3		Hepatocytes in zone 3 get the least oxygen and nutrients. They are the preferential sites of glycolysis, lipid formation, and drug biotransformations and are the first hepatocytes to undergo fatty accumulation and ischemic necrosis.
64. Which of the following arteries supplies the middle part of the common bile duct?	A	cystic	**D**	Main artery supplying the gallbladder; it also supplies the common hepatic duct, cystic duct and the proximal part of the common bile duct
	B	gastroduodenal		It is the terminal branch of the common hepatic artery that supplies the pylorus of the stomach, proximal duodenum and the head of the pancreas

	C	pancreaticoduodenal		It supplies parts of the stomach, head of the pancreas and duodenum
	D	right hepatic		It supplies most of the right lobe of the liver and the gallbladder
65. Which part of the pancreas forms a portion of the stomach bed?	A	Head	**C**	Body of pancreas forms the portion of the stomach bed (it is located behind the stomach)
	B	Neck		
	C	Body		
	D	Tail		
66. Which structure forms the center of the classic hepatic lobule?	A	Bile ductule	**B**	
	B	Central vein		Central vein forms the center of the CLASSIC hepatic lobule.
	C	Hepatic artery		
	D	Portal venule		
67. Which of the following structures is most posterior within the hepatoduodenal ligament?	A	Proper hepatic artery	**C**	Medial
	B	Common hepatic duct		Lateral
	C	Hepatic portal vein		Posterolateral
	D	Cystic duct		
68. Which of the following neuro endocrine cells are found in the stomach	A	G Cells	**A**	Gastric cells found in the <u>stomach</u>
	B	M cells		Found in the <u>intestines</u>
	C	I cells		Inclusion cells found in the <u>duodenum</u>
69. Which of the ff. Pituitary cells secrete growth hormones?	A	Acidophil	**A**	Acidophils secrete either growth hormone (somatotropin) or prolactin and are called somatotrophs and lactotrophs, respectively.
	B	Basophil		Basophilic cells are corticotrophs, gonadotrophs and thyrotrophs.
	C	Chromophobe		
	D	Pituicyte		
70. Which part of the suprarenal glands consists of small round heavily stained cells in a network of irregular cords interspersed with wide capillaries?	A	Medulla	**D**	Lies deep to the cortex consisting of large, pale-staining, polyhedral cells, and arranged in cords/clumps
	B	Zona glomerulosa		Consists of rounded clusters of columnar or pyramidal cells
	C	Zona fasciculata		Consists of long cords of large, spongy looking cells separated by fenestrated sinusoidal capillaries
	D	Zona reticularis		Consists of small round heavily stained cells in a network of irregular cords interspersed with wide capillaries
71. Superior pole of thyroid gland is supplied by which artery?	A	External Carotid	**A**	The superior thyroid artery (STA) arising from the external carotid artery (ECA), and the inferior thyroid artery (ITA) branching from the thyrocervical trunk create the blood supply to the thyroid gland.
	B	Internal Carotid		
	C	Common Carotid		

72. On thyroid biopsy of a patient with iodine deficiency goiter reveals squamous cells with an abundant colloid in the follicles	A	Pure thyroid	**C**	Cuboidal cells
	B	hyperthyroidism		Columnar cells
	C	hypothyroidism		Squamous cells
73. Which of the following endocrine cells increases blood calcium concentrations?	A	Chief	**A**	Secrete parathyroid hormone (PTH) → Raises blood calcium
	B	Oxyphil		Have very acidophilic cytoplasm. Show low levels of parathyroid synthesis
	C	Follicular		Produces thyroid hormones (T4 and T3)
	D	Parafollicular		Secretes calcitonin → reduces the concentration of blood calcium level
74. The shape of the right suprarenal gland is best described as:	A	Crescent	**B**	Describes the left suprarenal gland.
	B	Pyramidal		The right suprarenal gland is pyramidal shaped.
	C	Round		
	D	Stellate		
75. Which of the following is a characteristic of a steroid-secreting cell?	A	Basophilic cytoplasm	**D**	Not a characteristic of steroid-secreting cell
	B	Granular cytoplasm		
	C	Preipherally located nucleus		
	D	Profuse smooth ER		
76. Which part of the pituitary gland is derived from the oral ectoderm?	A	Adenohypophysis	**A**	Hypophyseal pouch grows cranially as an outpocketing from the roof of the pharynx (oral ectoderm); becomes the anterior pituitary gland or adenohypophysis.
	B	Infundibular Stalk		Remains connected to the neurohypophyseal bud.
	C	Neurohypophysis		Grows caudally from the floor of diencephalon (neural ectoderm); becomes the posterior pituitary gland or neurohypophysis .
77. Which of the following endocrine organs consists of compact spherical or ovoid masses that are embedded within the acinar exocrine tissue?	A	Adrenal Gland	**B**	
	B	Pancreas		One of the characteristics of the islet of Langerhans or pancreatic islets are these types of endocrine cells
	C	Pituitary Gland		
	D	Spleen		
78. Which of the ff. Glands has characteristic extracellular mineral deposits of various sizes?	A	Adrenal	**C**	
	B	Parathyroid		
	C	Pineal		Has extracellular mineral deposits of various sizes. The others dont
	D	Pituitary		
79. The interstitial cells in close association with the peritubular capillaries and proximal convoluted tubules secrete which hormone?	A	Aldosterone	**C**	secreted from the outer layer of the adrenal cortex, the zona glomerulosa
	B	Angiotensin		Angiotensinogen secreted by the liver → Angiotensin I release by kidney → activation to angiotensin II

	C	Erythropoietin		Secreted by the interstitial cells of peritubular capillaries and proximal convoluted tubules
	D	Renin		secreted by the juxtaglomerular cells of the kidney
80. Which of the following renal coverings extends into the renal sinus to ensheath the renal vessels and nerves?	A	Pararenal fat	**B**	Final layer external to the renal fascia
	B	Perirenal fat		Surrounds the kidneys and their vessels up to the renal sinus
	C	Renal capsule		Fibrous connective tissue that surrounds the kidneys
	D	Renal fascia		Condensation of the extraperitoneal fascia enclosing the perirenal fat, kidneys, and suprarenal (adrenal) glands
81. In the perinephric abscess, the close relationship of the medial side of the kidneys to which of the following muscles explains the pain felt in the pararenal region upon the extension of the hip joint?	A	Psoas	**A**	The close relationship of the kidneys to the psoas muscles explains why extension of the hip joint may increase pain resulting from inflammation in the pararenal areas. These muscles flex the thighs at the hip joints.
	B	Iliacus		
	C	External oblique		
	D	Transversus abdominis		
82. Which of the following statements is true regarding blood supply to kidneys?	A	Renal arteries course posterior to the ureter and renal vein	**C**	Classically each kidney is supplied by a single renal artery. In its course renal artery divides into anterior and posterior division (2) at the renal hilum, both of these divisions further divide into segmental arteries that are apical, upper, middle, lower and posterior. Segmental arteries are representing an end artery and they form independent renal segments. End arteries are arteries which do not anastomose with their neighbors. Arrangement in the hilum: **VAU = Vein → Artery → Ureter**
	B	The renal artery branches into 5 segments at the hilum		
	C	The renal segments are supplied by end arteries		
	D	Forms anastomosis with gonadal arteries		
83. On a sectioned kidney specimen, the medullary rays can be seen as striations in which of the following areas?	A	Renal medulla	**D**	The medullary ray is the middle part of the cortical lobule or renal lobule, consisting of a group of straight tubes to the collecting ducts. Their name is potentially misleading -- the "medullary" refers to their destination, not their location. They are located only in the renal cortex, and not in the renal medulla.
	B	Renal sinus		
	C	Renal pelvis		
	D	Renal cortex		
84. Which of the following ureteral relations cause ureter lies on its anterior surface is correct?	A	Psoas major muscle	**A**	The abdominal portions of the ureters descend on the anterior surface of the psoas muscles from the apex of the renal pelvis to the pelvic brim.
	B	Bladder		
	C	Quadratus lumborum		
	D	Transversus abdominis		
85. Pain from ureteric stones may be referred to dermatomal areas supplied by which of the following spinal nerves?	A	T7-T10	**B**	T11-T12 supplies the lower abdomen, lower back, groin, inner thighs. T11-T12 also specifically supplies the spinal nerves of the kidney or ureter.
	B	T11-T12		
	C	L3-L5		
	D	S1-S4		
86. The narrowest diameter of the ureter is found at which of the following areas?	A	At the renal pelvis	**C**	As the ureter goes down towards the urinary bladder, it becomes narrower and narrower.
	B	As it crosses over the uterine pelvis		
	C	Within the wall of the urinary		

		bladder		 **Figure 18.** Urinary constrictions 1: Ureteropelvic junction | 2: Crossing the external iliac artery and/or pelvic brim | 3: Vesico-ureteric junction [Moore]
87. Specialized smooth muscle cells in the walls of the afferent arterioles of the glomerulus are called:	A	Juxtaglomerular cells	**A**	Found in the tunica media of the afferent arterioles of the glomerulus
	B	Lacis cells		Extra glomerular mesangial cells that act to support the juxtaglomerular apparatus
	C	Macula densa		Comes into contact with the JG cells; Acts as a chemoreceptor where the decrease in NaCl will trigger the release of renin by the JG cells
	D	Umbrella cells		Transitional epithelium in the mucosa of the bladder wall
88. Which of the following structures forms the initial part of nephron?	A	Collecting duct	**C**	
	B	Distal convoluted tubule		
	C	glomerulus		Nephron consist of glomerulus and bowman's capsule.
	D	Proximal convoluted Tubule		
89. Which of the following structures arises from the ureteric bud?	A	Bowman's capsule	**B**	From metanephric blastema
	B	Collecting duct		From ureteric bud
	C	Glomerulus		From metanephric blastema
	D	Proximal Convoluted Tubule		From metanephric blastema
90. The permanent kidney becomes functional at what week of gestation?	A	4th	**D**	The pronephros disappears and the mesonephros appears
	B	5th		The metanephros arises caudal to the mesonephros
	C	8th		Degeneration of the mesonephros
	D	12th		The metanephros (3rd stage, permanent kidney) becomes functional
91. Among the renal tubules, which of the following histologic features are found exclusively in the proximal convoluted tubule?	A	Numerous long microvilli	**A**	Villi/ microvilli is responsible for increase of surface area **absorption**. PCT reabsorbs around 80% of water and ions that pass through the kidneys
	B	Shorter simple cuboidal cells		Characteristics of distal convoluted tubules
	C	Wider lumen		
	D	Pale staining		
92. Which of the following	A	The capillary endothelium	**A**	Part of the filtration membrane together with

structures may be altered in Diabetes Mellitus making the glomerular filter permeable to blood and large proteins	B	Renal tubular lumen		podocytes and glomerular basement membrane. Capillary endothelium is fenestrated.
	C	Macula densa		
93. Which of the following structures protects the cells of the transitional epithelium from the cytotoxic effects of hypotonic urine in the urinary bladder?	A	Umbrella cell	**C**	**Uroplakins** are cell membrane proteins, which form urothelial plaques on the surface of each urothelial cell. These plaques **contribute to a permeability barrier, preventing the influx of urine from the urinary tract lumen**.
	B	Lysosome		
	C	Uroplakin		
	D	Exosome		
94. A small bowel series demonstrated feathery mucosal pattern. Which structures demonstrate this pattern	A	Plicae circulares	**A**	Take note of the word small bowel
	B	Plicae semilunares		large intestine
	C	Rugae		stomach
	D	Succutations		large intestine
95. On barium swallow feel slight indentation on the mid-thoracic part of the esophagus is brought about by?	A	Aortic arch	**A**	**Cervical:** cricoid cartilage and cricopharyngeal sphincter at C6 vertebra **Thoracic:** aortic arch and left main bronchus **Diaphragmatic:** Lower esophageal sphincter/ diaphragmatic sphincter at the gastroesophageal junction
	B	Right atrium		
	C	Right crus of the diaphragm		
	D	Right main bronchus		
96. A normal upright plain abdominal radiological image shows air within the stomach. Which specific part of the stomach would it most likely be located?	A	Cardia	**C**	In an **upright** radiography of the stomach, air is expected to be found in the fundus. In **supine**, gas is expected to be found most anteriorly in the body and antrum of the stomach.
	B	Corpus		
	C	Fundus		
	D	Pylorus		
97. A plain abdominal radiograph revealed a staghorn sign. What organ is affected?	A	Gallbladder	**B**	Not visible
	B	Kidney		Indicative of calculus d/t kidney stones
	C	Stomach		Sometimes visible
	D	Liver		Hepatic shadow
98. Which of the following structures can be appreciated in a plain abdominal radiology?	A	Adrenal gland	**D**	**Table 1.** Observed Structures in an Abdominal X-ray **Normally Visible**: 1. Liver (hepatic shadow) 2. Spleen (splenic shadow) 3. Psoas muscles 4. Kidneys (renal shadow) 5. Flank stripes 6. Bone 7. Calcifications **Not Visible**: 1. Gallbladder (unless it's full of stones) 2. Pancreas 3. Ureter (unless contrast is used) 4. Adrenal glands 5. Veins **Sometimes Visible**: 1. Stomach and colon (if filled with air / gas) 2. Bladder (if urine-filled / fully distended) 3. Arteries (if calcified) 4. Small bowel (unless pathological, w/ gas)
	B	Gallbladder		
	C	Pancreas		
	D	Psoas muscle		
99. Which of the following radiologic studies is best able to outline the biliary tract?	A	Endoscopic Retrograde Cholangiopancreatography	**A**	Remember: "cholangio" - bile duct
	B	Upper Gastrointestinal Series		For lower esophagus, stomach, and duodenum
	C	Barium enema		For large intestine and rectum
	D	Double contrast		Type of Barium Enema where air is introduced after the

				barium
100. An intravenous pyelogram shows an obstruction of the ureter as it crosses the iliac vessels. This obstruction corresponds to which radiologic bony landmark?	A	Pubic symphysis	**C**	Not the location described in the question
	B	L1-L2 vertebrae		Ureteropelvic junction (UPJ)
	C	S1-S2 vertebrae		Passes over the iliac vessels at the pelvic brim. Ureter also traverses the bladder.
	D	Ischial spines		Landmark for checking engagement of fetal head