

For each of the following multiple choice questions, select the **BEST** answer.

1. Which of the following is **NOT** present in a typical cell from the zona fasciculata?
 - A. Abundance of smooth endoplasmic reticulum.
 - B. Mitochondria with tubular cristae
 - C. Lipid droplets
 - D. Secretory granules
 - E. Lipofuscin pigment

2. The secretion of parathyroid hormone (PTH) is controlled **directly** by
 - A. the pituitary gland.
 - B. blood calcium levels.
 - C. the hypothalamus.
 - D. interaction with the thyroid.
 - E. both A and C above.

3. Thyroglobulin is
 - A. produced by thyroid follicular cells.
 - B. the storage form of T3 and T4.
 - C. degraded by parafollicular cells.
 - D. All of the above statements are correct.
 - E. Only A and B above are correct statements.

4. Which of the following features would allow an experienced morphologist to distinguish different cell populations within an islet or within the anterior pituitary?
 - A. Amount of smooth endoplasmic reticulum
 - B. Size, shape and density of secretory granules
 - C. Number of mitochondria with tubular cristae
 - D. Amount of secretory product packaged in the Golgi
 - E. Size of the lysosomes and amount of lipofuscin pigment

5. The "secretory piece"/IgA complex, is synthesized by
 - A. plasma cells.
 - B. intercalated duct cells of the submandibular gland.
 - C. serous acinar cells of the parotid gland.
 - D. intralobular duct cells of the sublingual gland.
 - E. both A and C above.

6. In the exocrine pancreas, the integrity of tight junctions and the presence of numerous desmosomes between acinar cells is necessary to prevent
 - A. leakage of lytic enzymes into the extracellular space.
 - B. communication between adjacent acinar cells.
 - C. intercellular migration of lymphocytes.
 - D. stimulation of the acinar cells by autonomic fibers.
 - E. Both B and C above are correct statements.

7. The cells of which of the following have basal surface specializations that are similar to those found in distal convoluted tubules of the kidney?
- A. Interlobular ducts
 - B. Striated intralobular ducts
 - C. Intercalated ducts
 - D. Centroacinar cells
 - E. Both C and D above
8. Indicate the sequence a pin would pass as it moves from the lumen of the esophagus through its outer wall (lists are NOT all inclusive).
- A. Submucosa.... mucosa.... muscularis externa.... lamina propria
 - B. Lamina propria.... mucosa.... submucosa... muscularis externa
 - C. Mucosa.... submucosa.... lamina propria.... muscularis externa
 - D. Muscularis externa.... lamina propria.... submucosa.... mucosa
 - E. None of the above is a correct sequence.
9. In the jejunum, the _____ are the first to pick up chylomicrons for transport to the liver.
- A. M cells
 - B. lacteals
 - C. goblet cells
 - D. Brunner's glands
 - E. None of the above
10. Mark the **INCORRECT** statement about plicae circularis (valves of Kerckring).
- A. They are permanent folds of the mucosa and submucosa.
 - B. They increase the surface area.
 - C. They have villi on them.
 - D. They are best developed in the colon.
11. This cell has abundant RER, a prominent Golgi apparatus and eosinophilic apical granules that contain lysozyme.
- A. goblet
 - B. enterocyte
 - C. Paneth
 - D. chief
 - E. parietal
12. The gastric mucosal barrier is formed from
- A. mucus secreted by surface mucous cells.
 - B. tight junctions between surface mucous cells.
 - C. apical membranes of surface mucous cells.
 - D. mucus secreted by neck mucous cells.
 - E. all of the above.

13. Select the **CORRECT** statement about cell renewal in the GI tract.
- A. Most cell division occurs in the pits of the gastric mucosa.
 - B. Stem cells reside in the upper half of colonic crypts.
 - C. Chief cells turn over every week.
 - D. Enterocytes turn over every 5 - 6 days.
 - E. Paneth cells turn over every week.
14. Which of the following are functions of the gallbladder?
- A. bile storage
 - B. bile concentration
 - C. bile synthesis
 - D. All of the above.
 - E. Only A and B.
15. Which of the following cells derived from monocytes is an active phagocyte?
- A. Ito
 - B. Kupffer
 - C. hepatocyte
 - D. pit
 - E. None of the above
16. The cell that produces ECM components associated with fibrosis and cirrhosis in the liver is the
- A. pit.
 - B. Kupffer.
 - C. Ito.
 - D. endothelial.
 - E. None of the above
17. The liver specimen you are examining has an area with several necrotic bile ductules. You suspect that there may be something wrong with the
- A. central veins.
 - B. sinusoids.
 - C. terminal portal venules.
 - D. terminal hepatic arterioles.
 - E. Kupffer cells.
18. How many days does it take for spermatogenesis (spermatogonia to spermatozoa) to occur in a normal adult man?
- A. 1
 - B. 15
 - C. 35
 - D. 64
 - E. 90

19. In which portion of the male reproductive tract are sperm "fertile"?
- A. seminiferous tubules
 - B. ductuli efferentes
 - C. head of epididymis
 - D. tail of epididymis
 - E. All of the above
20. Which of the following cells form part of the blood-testis barrier?
- A. Sertoli
 - B. interstitial cells of Leydig
 - C. Littre
 - D. myofibroblasts
 - E. secondary spermatocytes
21. Which of the following has fructose as an important constituent of its secretion?
- A. seminal vesicle
 - B. prostate gland
 - C. bulbourethral gland
 - D. glands of Littre
 - E. vas deferens
22. Alternating groups of ciliated and nonciliated cells are found in the
- A. vas deferens.
 - B. seminiferous tubules.
 - C. ductuli efferentes.
 - D. rete testis.
 - E. epididymis.
23. Citric acid, acid phosphatase and zinc serve as functional markers for the
- A. seminal vesicle.
 - B. prostate.
 - C. epididymis.
 - D. vas deferens.
 - E. None of the above.
24. Which of the following is/are feature(s) of the oviduct (uterine tube)?
- A. Complex folds with villi
 - B. Secretory cells respond to estrogen
 - C. Cells of lamina propria non-responsive to estrogen
 - D. Wall comprised of both smooth and skeletal muscle
 - E. Both A and B above
25. Which of the following occur in the myometrium during pregnancy?
- A. Increase in cell number and size
 - B. Overall decrease in cell organelles
 - C. Increase in number of gap junctions
 - D. All of the above
 - E. Only A and C above

26. A Nabothian cyst
- A. is a precancerous change in the endocervix.
 - B. may occur following metaplastic changes in the ducts of cervical glands.
 - C. results from invasion of aberrant endometrial tissue into the cervix.
 - D. usually is located within the mucosa of the uterine tube.
 - E. is the result of excessive glycogen accumulation within the vaginal mucosa.
27. Follicular cells
- A. synthesize meiotic inhibitory factor.
 - B. are hormone responsive.
 - C. transport nutrients to oocytes.
 - D. All of the above statements are correct.
 - E. Only A and C above are correct statements.
28. Which of the following is/are characteristic of a corpus luteum?
- A. Extensive vascularization
 - B. Many cells with lipid droplets
 - C. Synthesis of steroid hormones
 - D. All of the above
 - E. Only B and C above
29. The zona pellucida
- A. lies between the follicular and thecal cells.
 - B. consists of a single layer of cells.
 - C. is the prominent basement membrane of the granulosa cells.
 - D. synthesizes estrogen.
 - E. None of the above statements are correct.
30. Histologic changes in breast structure during the menstrual cycle include
- A. appearance of many mitotic figures during days 3 - 7.
 - B. "apocrine" secretion during the secretory phase.
 - C. stromal proliferation and edema in the postovulatory phase.
 - D. all of the above.
 - E. A and C only.
31. Histologic changes in the breast during the first half of pregnancy include
- A. stromal expansion.
 - B. cell proliferation in ductal epithelium.
 - C. formation of alveoli.
 - D. all of the above.
 - E. B and C only.
32. The adult male breast
- A. may develop cancer.
 - B. may become hyperplastic in response to estrogenic hormones.
 - C. usually has no lobules or alveoli.
 - D. All of the above are correct statements.
 - E. Only A and C are correct statements.