THYROID GLAND

1. ____________, a mineral, is taken up by ________________ cells in the thyroid and binds to ________________________, which contains the active thyroid hormones, ________ and ________.

2. The follicle contains _____________ which holds thyroglobulin and T3 and T4 until needed.

3. The functions of thyroid hormones are to ____________________ and ____________________.

4. The stimulus for production of thyroid hormones is ____________________________ .
   What happens then? ________________________________________________________

5. What happens when the blood levels of thyroid hormones increases?
   _______________________________________________________________________

6. What thyroid disorder produces myxedema in adults? __________________________

7. What thyroid disorder produces cretinism in children? _________________________

8. What thyroid disorder causes exophthalmus and goiter? _______________________

9. What other hormones stimulates osteoblasts and along with thyroxine stimulates bone growth? ______________ and _____________________

10. What hormone is produced by the parafollicular cells of the thyroid gland? __________
    What is the function of this hormone? _______________________________________

11. What is the stimulus for calcitonin production? ________________________________
    How does calcitonin decrease calcium levels in the blood? _______________________
    _______________________________________________________________________

12. What gland produces a hormone that is antagonistic to the hormone produced by thyroid parafollicular cells?________________________

13. The _____________ cells of the parathyroid gland produce ________________ hormone.
    What is the function of this hormone? _______________________________________

14. What is the stimulus for production of parathyroid hormone? ___________________
    How does parathyroid hormone increase calcium levels in the blood? ______________
    _______________________________________________________________________

    What vitamin is important in absorption of calcium from the GI tract by the kidneys? _____

15. What hormone imbalances cause “rubber boy”, a disorder in which the bones are mostly cartilage? ________________________________

16. What disorder of the parathyroid gland causes muscle spasms and seizures? __________
ADRENAL CORTEX

17. Name the outer zone and the class of hormones it produces.

__________________________  _____________________________________

Name the specific hormone produced by this zone.________________________________

What is the function of this hormone? _______________________________________

18. Describe the mechanism by which aldosterone raises blood pressure.

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

19. What aldosterone disorder causes decreased blood pressure? ______________________

What aldosterone disorder causes increased blood pressure? _______________________

20. Name the middle zone and the class of hormones it produces.

__________________________  _____________________________________

Name two specific hormones produced by this zone.________________________________

What is the function of these hormones? ______________________________________

21. Describe two effects of cortisol ____________________________________________

____________________________________________________________________

22. What disorder causes Addison's disease (weakness and bronze skin color)? _____________

What disorder causes Cushing's syndrome (fluid retention, swollen face)? ______________

23. Name the inner zone and the class of hormones it produces.

__________________________  _____________________________________

Name the hormones produced by this zone. ______________________________________

What is the function of these hormones? ______________________________________

24. What disorder due to overproduction at an early age causes early sexual development?

______________________________

ADRENAL MEDULLA

25. Name the class of hormones it produces. _________________________________

Name the two hormones produced by this area. _________________________________

What is the function of these hormones? _________________________________
KIDNEYS

26. Name the process by which the kidneys regulate blood pressure (described in #18).

____________________________________

What other hormone that increases blood pressure is stimulated by this system? ________

27. How do the kidneys increase circulating red blood cells? ___________________________

28. What hormone is produced by delta cells in the kidney and by the hypothalamus?

________________________

PANCREAS

29. The cortex of the pancreas has an exocrine function and produces _________________.

30. The __________________________ are the endocrine portion of the pancreas.

Name the two hormones produced by this area. _________________________________

What is the function of these hormones? _________________________________

31. Name the hormone produced by the alpha cells. _________________________________

What is it’s function? _________________________________

What is the target of this hormone and what happens?___________________________

32. Name the hormone produced by the beta cells. _________________________________

What is it’s function? _________________________________

What are the two targets of this hormone and what happens?

________________________________________________________

________________________________________________________

33. What feedback system controls the activity of insulin and glucagon? _____________

34. Name the disorder caused by early onset of diabetes, also called insulin dependent diabetes.

________________________

Name the disorder caused by late onset of diabetes in which receptors don’t respond to insulin.________________________

GENERAL ADAPTATION SYNDROME

35. What hormones are active during the alarm phase? ______________________________

What happens in the body? _________________________________

This is also called the __________________________ mechanism.

36. What hormones are active during the resistance phase? __________________________

This is __________________________ adjustment (long term or short term)

37. What happens during the exhaustion phase? _________________________________

________________________________________________________
1. iodine; follicle; thyroglobulin; T₃; T₄
2. colloid
3. increase metabolism; increase ATP production
4. decreased blood levels of thyroid hormones;
   hypothalamus releases TRH causing anterior pituitary to release TSH which targets the thyroid to release T₃ and T₄
5. hypothalamus releases TIH which stops production of TSH by anterior pituitary
6. hypothyroidism
7. hypothyroidism during development
8. hyperthyroidism
9. growth hormone; sex hormones
10. calcitonin; decreases blood calcium levels
11. increased blood calcium levels;
    stimulates osteoblasts to store calcium in bone; stimulates excretion of calcium by kidneys
12. parathyroid gland
13. chief; parathyroid; increases blood calcium levels
14. decreased blood calcium levels;
    stimulates osteoclasts to break down bone; stimulates kidneys to reabsorb more calcium
15. too much parathyroid hormone and not enough calcitonin
16. hypoparathyroidism
17. zona glomerulosa; mineralocorticoids; aldosterone; raises blood pressure
18. Renin converts angiotensinogen into angiotensin I;
    ACE (angiotensin converting enzyme) changes angiotensin I into angiotensin II;
    Angiotensin II causes aldosterone to target kidney tubules and increase sodium ion absorption; water follows by osmosis, raising blood pressure
    Angiotensin II also causes vasoconstriction, which increases blood pressure
19. hypoaldosteronism; hyperaldosteronism
20. zona fasciculate; glucocorticoids; cortisol and cortisone; long term control of stress
21. spare glucose by using proteins and fats to produce glucose; store glucose as glycogen
22. hypogluocorticoidism; hyperglucocorticoidism
23. zona reticularis; androgens; sex hormones; produced secondary sex characteristics at puberty
24. androgenital syndrome
25. catecholamines; epinephrine and norepinephrine; short term response to stress (mobilizes glycogen for metabolism)
26. renin-antigensin system; ADH
27. produce erythropoietin (EPO), a hormone necessary for RBC production
28. growth hormone inhibiting hormone (somatostatin)
29. digestive enzymes
30. islets of Langerhans; insulin and glucagon; regulate blood sugar
31. glucagon; increases blood sugar level; liver breaks glycogen down to glucose
32. insulin; decreases blood sugar level;
    cells - increased update and use of glucose; liver - storage of glucose as glycogen
33. negative
34. type I diabetes mellitus; type II diabetes mellitus
35. epinephrine and norepinephrine; heart and respiratory rate increase; fight or flight
36. glucocorticoids; long term
37. decreased energy reserves and collapse of vital systems