Refresher points:

* Types of chemical messengers:

1. Paracrines: secreted by cells into the ECF and affect neighboring target cells
2. Autocrines: secreted by cells into the ECF and affect the function of the same cells that produced them
3. Endocrine: released by glands or specialized cells into the circulation and influence the function of target cells at another part of the body

* Endocrine glands are classified as **Central** (those linked to nervous system) & **Peripheral** **glands** (which are not linked to nervous system)
* Term HORMONE was coined by bayliss & starling in 1902, and they discovered first hormone SECRETIN
* Structural classification of hormones

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Type** | **Structure** | **E.g.** |
| 1. | Peptide hormone | Short amino acid chain (<100) | TRH, oxytocin |
| 2. | Protein hormone | Long amino acid chain (>100) | GH, prolactin |
| 3. | Amine hormone | Amino acid derivative | Thyroid hormones, catecholamines |
| 4. | Steroid hormones | Neutral lipid derivatives | Progesterone, cortisol, testosterone |

* Peptide hormones & catecholamines are hydrophilic whereas, thyroid hormones & steroid hormones are lipophilic
* Receptors’ position
* Peptide, protein & amine hormones - on the cell membrane (surface of target cell)
* Steroid hormones – inside the cell (cytoplasm & nucleus)
* Thyroid hormones – inside cell (cytoplasm & nucleus)
* Protein hormone synthesis:

Preprohormones (RER) > prohormones (golgi) > active hormones

* **Golgi body** concentrates the protein hormones and are secreted by exocytosis
* Steroid hormones are not stored and are synthesized whenever there is requirement
* Their precursor cholesterol is only stored
* Protein and peptide hormones are transported in dissolved form whereas steroid hormones & thyroid hormones are bound to plasma proteins to aid transport
* 50% catecholamines are transported freely and remaining are freely bound to plasma protein
* **Tropic hormones**: target tissue is other endocrine glands
* **Endocrine disrupting chemicals**: hormone like organic substances (human made or of plant origin), structurally similar to hormones which disrupt endocrine communication
* The steroids and thyroid hormone (free form) easily pass through the cell membrane to bind with internal receptors
* Internal receptors of steroid & thyroid hormones are transcriptional factors that regulate specific genes in turn producing new protein in target tissue to bring the effect
* Steroid hormone Mechanism of action:
* hormone binds with receptor (in nucleus or in cytoplasm)
* hormone receptor complex binds to DNA in nucleus at hormone responsive element
* activates gene which transcribes m-RNA
* protein production which provides ultimate response
* few steroid hormones also act via unique membrane protein receptors producing non genomic effects along with the genomic pathway for fast response e.g., sex hormones
* Hormones can produce effect at very low concentrations as low as 1 pg/ml
* Steroid and thyroid hormones are non immunogenic whereas protein hormones are
* Neuroendocrine hormones are secreted by neurons into the circulation and influence the function of target tissue at different part of the body
* **Positive feedback** occurs when the biological action of the hormone causes additional secretion of the hormone ex: LH surge as a result of estrogen effect on ant. pituitary
* **Negative feedback:** release of a hormonefeedbacks on its own gland to decrease its release
* Hormones are grouped into 6 families based on their structural similarity

1. ACTH family ACTH, MSH
2. Somatotropic family GH, PRL, chorionic somatomammotropin
3. Glycoprotein family FSH, LH, hCG, Ecg
4. Oxytocin family oxytocin, vasopressin
5. Insulin family Insulin, IGF 1, IGF II, IGF III
6. Steroid family gonadal & adrenal steroids

* Metabolic clearance rate of a hormone = Rate of disappearance of hormone from the plasma / Concentration of hormone
* Intracellular signaling After Hormone Receptor Activation

1. Ion channel linked receptors
2. G protein linked receptors
3. Enzyme linked receptors
4. Intracellular Hormone Receptors and Activation of Genes

* Secondary messenger system: hormone only activates receptor, rest is taken over by secondary messengers

1. Adenylyl Cyclase–cAMP Second Messenger System

Adrenocorticotropic hormone (ACTH) Angiotensin II (epithelial cells) Calcitonin Catecholamines (β receptors) Corticotropin-releasing hormone (CRH) Follicle-stimulating hormone (FSH) Glucagon Human chorionic gonadotropin (HCG) Luteinizing hormone (LH) Parathyroid hormone (PTH) Secretin Somatostatin Thyroid-stimulating hormone (TSH) Vasopressin (V2 receptor, epithelial cells)

1. Cell Membrane Phospholipid Second Messenger System : DAG, IP3
2. Angiotensin II (vascular smooth muscle) Catecholamines (α receptors) Gonadotropin-releasing hormone (GnRH) Growth hormone–releasing hormone (GHRH) Oxytocin Thyrotropin releasing hormone (TRH) Vasopressin (V1 receptor
3. Calcium-Calmodulin Second Messenger System

* Steroid Hormones Increase Protein Synthesis in target cell
* Thyroid Hormones Increase Gene Transcription in the Cell Nucleus

|  |  |
| --- | --- |
| CRH | 41 |
| TRH | 3 |
| Somatostatin | 14/24 |
| GnRH | 10 |
| GH | 191 |
| Somatocrinin (GHRH) | 44 |
| Vasopressin | 9 |
| oxytocin | 9 |
| PTH | 84 |
| Calcitonin | 32 |
| Insulin | 51 |
| ANP | 126 |

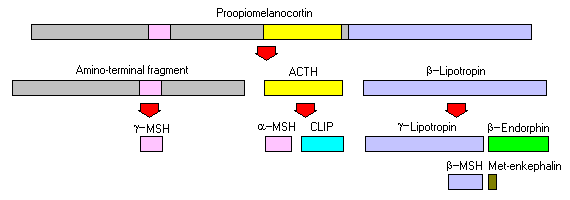
* Secretory neurons of hypothalamus

1. Arcuate nucleus
2. Paraventricular nucleus
3. Supraoptic nuclei
4. Preoptic ae

* Releasing hormones of hypothalamus: GHRH, GnRH, TRH, CRH, PRH
* Inhibitory hormones: GHIH, PIH
* GHRH also called as somatocrinin/somatotropin
* TRH is smallest peptide hormone (3aa)
* Inhibin, prolactin & LH have inhibitory action on GnRH
* Melatonin also has effect on GnRH secretion
* PIH is dopamine
* Pars distalis of adenohypophysis produce trophic hormones
* P. tuberalis has no endocrine function
* P. intermedia produce MSH
* 5 types of cells in A.P produce 6 different hormones
* Chromophobes and chromophores are 2 types of cells in AP
* Chromophobes are inactive cells and chromophills are of 2 types 1. Acidophils 2. Basophils
* Acidophils: a. somatotropes & mammotropes
* Basophils: thyrotropes, corticotropes & gonadotropes
* GH is a. protein sparer b. lipolytic c. diabetogenic d. galactopoetic
* Overproduction of GH: gigantism in young & acromegaly in adults
* Hypoprodution of GH cause dwarfism
* TSH function:

1. Iodide trapping
2. Thyroxine release
3. Thyroglobulin lysis whie release

* POMC is a precursor protein produced by intermediate pit lobe & in corticotropes



* MSH cause melanin concentration & dispersion
* Beta LPH have role in stress
* Neurohypophysis has pituicytes and supraoptic & paraventricular nuclei
* Neurophysins help in transport of oxytocin & ADH
* **Anti-diuretic hormone** (ADH) or vasopressin: regulating blood volume and electrolyte levels, (sodium).
* **Released** When the osmolality is above 280 mOsm/kg resulting in water reabsorption
* Anterior Pituitary Affecting Hormones

The hypothalamic-pituitary-adrenal (HPA) : blood portal system connecting the hypothalamus and anterior pituitary via the infundibulum.

**Somatostatin** – has two active forms – somatostatin-14 (S14) and somatostatin-28 (S28) – with 14 and 28 amino acids, respectively. it inhibits GH release from the pituitary.

**Thyroid Gland**

**General T3/4 actions** –thyroid hormones help develop several body systems, particularly the brain. And help drive metabolic activity and function of nearly all organs.

**Thyroxine** (T4) - T4 is less physiologically active and produced exclusively within the thyroid.

**Tri-iodothyronine** (T3) – T3 is the primary metabolic hormone from the thyroid

**Parathyroid hormone** (PTH) – PTH is the primary regulator of calcium and phosphate homeostasis in the human body. Other hormones involved in calcium homeostasin is calcitonin of thyroid and vitD3 of kidney

**Pancreas**

**Insulin** –is a 51-amino acid peptide that is synthesized and secreted by the beta cells. primary function of insulin is to control glucose levels.

The utilization of glucose is possible through glucose transporters, GLUT-1,2,3,4, and 5. GLUT-4 is the primary transporter in muscle and adipose

**Adrenal Glands**

The adrenal gland is located just above the kidney and produces several hormones such as aldosterone, cortisol, DHEA, norepinephrine, and epinephrine.

The cortex has three layers: zona glomerulosa, zona fasciculata, and zona reticularis – which secrete aldosterone, cortisol, and DHEA, respectively.

The medulla of the adrenal gland is composed of chromaffin cells which synthesize and release norepinephrine and epinephrine.

**Cortisol** is a glucocorticoid hormone synthesized in the zona fasciculata of the adrenal gland. Cortisol primarily acts to increase glucose levels in the body, which occurs via increased gluconeogenesis, lipolysis, and proteolysis.

**Aldosterone** – Aldosterone is a crucial mineralocorticoid hormone in the renin-angiotensin system (RAS) – which is important for regulating cardiac, renal, and vascular physiology. The RAS pathway begins with renin converting angiotensinogen into the inactive angiotensin I, which then converts via angiotensin-converting enzyme (ACE) action angiotensin II (primarily in the lungs). Angiotensin II mediates aldosterone release

**Adrenal Androgens** are primarily dehydroepiandrosterone (DHEA) and DHEA sulfate. These two hormones have a minimal, if any, inherent androgenic properties. A small percentage will be converted to androstenedione, and then to testosterone (and potentially estrogen) in both the adrenals and peripheral tissue.

1. Catecholamines are stotred in
2. Colloid
3. Golgi bodies
4. Chromaffin granules
5. Not stored
6. Statement A: steroid hormones are stored in endoplasmic reticulum

Statement B: cholesterol is the precursor of steroid hormones

1. Both statements A & B are true
2. Only statement A is false
3. Only Statement B is true
4. Both statements A & C are true
5. Which of the following hormones doesn’t have receptors on cell membrane
6. Growth hormone
7. GnRH
8. Insulin
9. Aldosterone
10. Which of the following hormones don’t have receptor inside cell
11. Cortisol
12. Vasopressin
13. Aldosterone
14. All of the above
15. Amine hormones are derived from which of the following amino acid
16. Tyrosine
17. Tryptophan
18. Threonine
19. Phenylalanine
20. Which among the following is not an amino acid derivative hormone?
21. Adrenaline
22. Melatonin
23. Thyroxine
24. None of the above
25. The hormones which regulate synthesis and release of other hormones is called
26. Trophic hormones
27. Tropic hormones
28. Hypertropic hormones
29. Hypotrophic hormones
30. Which among the following is a tropic hormone
31. TRH
32. TSH
33. T3
34. T4
35. Somatostatin is secreted from
36. Hypothalamus
37. Pancreas
38. All the above
39. None of the above
40. Hormone like substance which disrupt endocrine communication
41. Antagonist hormones
42. Endocrine disrupting chemicals
43. Anhormones
44. All the above
45. Assertion: Peptide hormones receptors are on surface of target cells

Reason: Peptide hormones cannot surpass cell membrane

1. Both A and R are true and R is the correct explanation of A.
2. Both A and R are true but R is NOT the correct explanation of A.
3. A is true but R is false.
4. A is false but R is true.
5. Both A and R are false.
6. Mechanism of action of steroid hormones in target cell is via
7. Changes protein structure
8. Releases secondary messengers
9. Activates enzymes
10. Activates genes
11. DDE (dichloro diphenyldichloro ethylene) a byproduct of DDT is a EDC which act as
12. Androgen agonist
13. Androgen antagonist
14. Estrogen agonist
15. Estrogen antagonist
16. A special hormone released on to body to act upon another animal is
17. Exohormone
18. Pheromone
19. All the above
20. None of the above
21. First hormone to be discovered
22. ADH
23. Somatotropin
24. Somatostatin
25. Secretin
26. Hormone secretin was discovered by
27. Bayliss
28. Starling
29. All the above
30. None of the above
31. Who coined the term **hormone**
32. Bayliss & starling
33. Claude Bernard
34. William bowman
35. Banting & best
36. Which of the following hormone is immunogenic
37. Aldosterone
38. Cortisol
39. ADH
40. T3
41. Statement A: Insulin is a hormone released by pancreas

Statement B: oral Insulin therapy is followed for insulin deficiency

1. Both statements A & B are true
2. Only statement A is false
3. Only Statement B is true
4. Both statements A & B are false
5. Statement A: somatostatin is released by delta cells of pancreas

Statement B: somatostatin is released by hypothalamus

1. Both statements A & B are true
2. Only statement A is false
3. Only Statement B is true
4. Both statements A & B are false
5. Match the following hormones with their type
6. Calcitonin 1. Peptide
7. Dopamine 2. Steroid
8. LH 3. Glycoprotein
9. Vit D 4. Amine
10. Growth hormone 5. Protein
11. A-1, B-5, C-4, D-3, E-2
12. A-5, B-4, C-1, D-2, E-3
13. A-4, B-5, C-2, D-3, E-1
14. A-1, B-4, C-3, D-2, E-5
15. Which among the following hormone regulates energy metabolism
16. Aldosterone
17. PTH
18. Epinephrine
19. Renin
20. Which among the following doesn’t involve in mineral metabolism
21. PTH
22. Angiotensin II
23. ANP
24. ACTH
25. Which of the following is not a gut hormone
26. Relaxin
27. Secretin
28. Bombesin
29. Substance P
30. Plasma clearance of a hormone is via
31. metabolic destruction by the tissues
32. excretion by the liver into the bile
33. excretion by the kidneys into the urine
34. all the above
35. Match the following type of receptors with hormones
36. Ion channel 1. Insulin
37. Enzyme linked 2. Glucagon
38. G protein linked 3. Aldosterone
39. Intracellular 4. Adrenaline
40. A-1, B-2, C-4, D-3
41. A-3, B-4, C-1, D-2
42. A-4, B-1, C-2, D-3
43. A-1, B-4, C-3, D-2
44. Assertion: number of receptors on target cell is always constant

Reason: only the receptors damaged or destroyed while functioning are replaced to maintain constant number

1. Both A and R are true and R is the correct explanation of A.
2. Both A and R are true but R is NOT the correct explanation of A.
3. A is true but R is false.
4. A is false but R is true.
5. Both A and R are false.
6. The reduction in number of receptors on target cell as a result of increased plasma hormone concentration is
7. Anti regulation
8. Negative feedback
9. Down regulation
10. All the above
11. Which of the following statement is not true about G protein coupled receptors
12. G protein receptors have seven transmembrane loops
13. G protein has 3 subunits
14. β subunit binds with GDP
15. GDP binding cause dissociation of α subunit
16. Which of the following statements are true about enzyme linked hormonal receptors
17. Receptor itself act as enzyme
18. Receptor is in close association with enzyme
19. Leptin hormone receptor is an enzyme linked receptor
20. Has 3 transmembrane loops
21. A, C
22. B, C, D
23. A, B, C
24. B, D
25. Pattern of hormone secretion where hormone is secreted in pulses many times a day
26. Circadian
27. Ultradian
28. Infradian
29. Meridian
30. Hormone concentration peaks every 24hrs once, this is
31. Circadian
32. Ultradian
33. Infradian
34. Meridian
35. LH surge in dogs occur once in 6months and this pattern of hormone secretion is called
36. Circadian
37. Ultradian
38. Infradian
39. Meridian
40. Cortisol peaks every morning and growth hormone peaks in the night, this indicates GH & cortisol follow
41. Circadian rhythm
42. Ultradian rhythm
43. Infradian rhythm
44. Meridian rhythm
45. Insulin levels do not fluctuate whole day following
46. Circadian rhythm
47. Ultradian rhythm
48. Infradian rhythm
49. Meridian rhythm
50. Statement A: in horses cortisol surge is seen once in mornings

Statement B: 2 cortisol surges are observed in pigs in a day

Statement C: 3 surges of cortisol noticed in dogs

1. Both statements A & B are true
2. Both statements B & C are true
3. Only Statement B is true
4. Both statements A & C are true
5. Hormone secretion is regulated by which of the following factors:
6. By metabolite concentration
7. Concentration of hormone itself
8. Other hormones
9. All the above
10. Pituitary gland lies in
11. Sella turcica
12. Cribrifom plate
13. Ethmoid fossa
14. All the above
15. Some hormones together act to produce a grater response, this effect can be called as
16. Potentiation
17. Synergism
18. Antagonism
19. None of the above
20. The phenomenon where a hormone require another hormone to produce its effect is
21. Synergic effect
22. Permissive effect
23. Antagonism
24. Potentiation
25. Somatostatin inhibiting secretion of GHRH is \_\_\_\_ type of feedback control
26. Ultra short loop
27. Short loop
28. Long loop
29. Ultra long loop
30. Feedback control between hypothalamic & pituitary hormones can be said to be
31. Ultra short loop
32. Short loop
33. Long loop
34. Ultra long loop
35. Small amount of glucocorticoid is required for the lipolytic action of catecholamines, this phenomenon is called
36. Synergic effect
37. Permissive effect
38. Antagonism
39. Potentiation
40. Which of the following make hypothalamus a endocrine gland
41. Arcuate nucleus
42. Paraventricular nucleus
43. Supraoptic nucleus
44. Pre optic area
45. All the above
46. Which of the following gland is called a “master endocrine gland”
47. Pituitary gland
48. Hypothalamus
49. Thyroid gland
50. Liver
51. Which of the following Hypothalamus are released by hypothalamus
52. Hypophysotropins
53. Hypothalamus Inhibitory hormones
54. Releasing hormones
55. All the above
56. Match the following hormones with their number of aminoacids
57. Oxytocin 1. 3
58. TSH 2. 51
59. GH 3. 203
60. Insulin 4. 10
61. GnRH 5. 9
62. FSH 6. 191
63. A-1, B-5, C-4, D-3, E-2, F-6
64. A-6, B-4, C-1, D-2, E-3, F-5
65. A-5, B-1, C-6, D-2, E-6, F-3
66. A-5, B-4, C-6, D-2, E-1, F-3
67. Which of the following is an inhibitory hormone of hypothalamus
68. Adrenaline
69. Dopamine
70. Acetyl choline
71. Glutamate
72. Dopamine act as antagonist of which mammalian hormone
73. Oxytocin
74. Leptin
75. Prolactin
76. Parathyroid hormone
77. Number of amino acids in Somatocrinin (GHRH)
78. 33
79. 44
80. 55
81. 66
82. Anterior pituitary hormones secretion are controlled by hypothalamus via
83. Releasing & inhibiting hormones
84. Neuronal signals
85. Neurohypophysins
86. All the above
87. Which of the following is the major function of hypothalamo hypophysial portal system
88. Supply nutrients to pituitary gland
89. Supply nutrients to hypothalamic tissue
90. Carry releasing & inhibitory hormones to pituitary gland
91. Carry pituitary hormones to hypothalamus
92. An extension of hypothalamic tissue into the pituitary stalk is called
93. Adenohypophysis
94. Tuber cinereum
95. Neurohypophysis
96. Tuber omentale
97. Hypothalamic hormones are released into
98. Median eminence
99. Tuber cinereum
100. Adenohypophysis
101. Only A&B
102. Only B&C
103. Which of the following factors stimulate production of GHRH
104. Serotonin
105. ADH
106. Deep sleep
107. All the above
108. Factor that inhibits GHRH secretion is
109. Reduced glucose levels
110. Increased level of fatty acids
111. Exercise
112. Stress
113. Statement A: prolactin is a galactopoetic hormone

Statement B: GHRH is a galactopoetic hormone

1. Both statements A & B are true
2. Both statements B & C are true
3. Only Statement B is true
4. Both statements A & C are true
5. Statement A: TRH is a largest peptide hormone

Statement B: TRH stimulates secretion of ACTH, PRL, Vasopressin & GH

1. Both statements A & B are true
2. Both statements B & C are true
3. Only Statement B is true
4. Both statements A & C are true
5. What is true about CRH
6. Negative feedback on ACTH
7. Stress reduces its secretion
8. Increases body temperature
9. Synthesis increases during mornings in diurnal animals
10. Statement A: somatostatin has negative effect on secretion of growth hormone

Statement B: GHIH reduces intestinal motility & absorption in intestines

1. Both statements A & B are true
2. Both statements A & B are not true
3. Only Statement B is true
4. Only statement A is true
5. Effect of Somatomedin C on somatostatin secretion
6. Increases secretion
7. Inhibits secretion
8. Has no effect
9. Reduces its excretion

1. Hormones with PRH like activity
2. VIP
3. TRH
4. All of the above
5. None of the above
6. Major endocrine part of adenohypophysis is
7. Pars distalis
8. Pars media
9. Pars distalis
10. Pars intermedia
11. Function of MSH produced by pars intermedia is
12. Release of melatonin from penial gland
13. Production of melanin
14. Maintaining concentration of estrogen
15. Stimulation of progesterone secretion

1. Secretive cells of adenohypophysis are
2. Chromophobes
3. Chromophills
4. Both
5. None
6. Which of the following are basophils of pituitary gland
7. Somatotropes
8. Lactotropes
9. Mammotropes
10. Thyrotropes
11. Match the following
12. Somatotropes 1. TSH
13. Mammotropes 2. ICSH
14. Thyrotropes 3. LPH
15. Corticotropes 4. PRL
16. Gonadotropes 5. GH

6. Oxytocin

1. A-1, B-5, C-4, D-3, E-2
2. A-6, B-4, C-1, D-2, E-3
3. A-5, B-4, C-1, D-3, E-2
4. A-5, B-6, C-1, D-2, E-3
5. Corticotropes of anterior pituitary produce
6. Pro-opiomelanocortin
7. Melanocortin
8. Opiomelanocortin
9. All the above
10. Number of aminoacids in GH
11. 91
12. 191
13. 203
14. 129
15. POMC is precursor of
16. Melanin
17. Melatonin
18. Corticotropin
19. Parathyroid hormone
20. Release of GH is stimulated by
21. Increased circulating glucose
22. Decreased protein & aminoacids in blood
23. Sleep
24. Increase in free fatty acids in blood
25. Assertion: skeletal growth ceases after puberty

Reason: GH hormone production & release is reduced post puberty

1. Both A and R are true and R is the correct explanation of A.
2. Both A and R are true but R is NOT the correct explanation of A.
3. A is true but R is false.
4. A is false but R is true.
5. Both A and R are false.
6. Which of the following is not true about growth hormone
7. GH is anabolic hormone
8. Enhance action of FSH
9. Ghrelin hormone has inhibitory effect on GH
10. Pyrogens increase GH release
11. Indirect effects of growth hormone are mediated by
12. Somatomedin C
13. IGF-I
14. Both
15. None
16. Insulin like growth factors are released from
17. Pancreas
18. Liver
19. Hypothalamus
20. All the above
21. Growth promoting effects of growth hormone are due to
22. Direct effect of GH on target cells
23. Effect of somatomedins on target cells
24. Both direct & indirect effects of GH lead to growth
25. All the above
26. Direct effect of GH
27. Lipolysis
28. Protein digestion
29. Gluconeogenesis
30. Stimulation of insulin
31. Statement A: Target organ of growth hormone is Bones

Statement B: Target organ of GH is liver

1. Both statements A & B are true
2. Both statements A & B are not true
3. Only Statement B is true
4. Only statement A is true
5. Which of the following is true about IGF I
6. Also called somatomedin A
7. Promotes cartilaginous growth
8. Inhibited by estrogen
9. Functional during fetal period only
10. Assertion: IGF 1 promotes protein synthesis in muscle

Reason: Recombinant BST is used for lean meat production

1. Both A and R are true and R is the correct explanation of A.
2. Both A and R are true but R is NOT the correct explanation of A.
3. A is true but R is false.
4. A is false but R is true.
5. Both A and R are false.
6. Which of the following is not an effect of GH
7. Reduce glucose uptake
8. Increase amino acid uptake
9. Protein sparer
10. Reduce lipolysis
11. Assertion: GH produce diabetogenic effect

Reason: GH inhibit insulin production

1. Both A and R are true and R is the correct explanation of A.
2. Both A and R are true but R is NOT the correct explanation of A.
3. A is true but R is false.
4. A is false but R is true.
5. Both A and R are false.
6. Excessive production of growth hormone in animals with active epiphyseal plate leads to
7. Acromegaly
8. Gigantism
9. Dwarfism
10. Both A&B
11. Thickened bod with excessive soft tissue due to abnormal production of STH is called
12. Acromegaly
13. Gigantism
14. Dwarfism
15. Both A&B
16. Anterior pituitary is originated from
17. Hypothalamus
18. Turcica
19. Ratke’s pouch
20. A&C
21. Posterior pituitary is derived from
22. Neural tissue of hypothalamus
23. Neural tissue of spinal cord
24. Ratke’s pouch
25. A&C
26. Thyrotropes of anterior pituitary gland produce
27. TSH
28. TRH
29. T3
30. Thyrotropin
31. Statement A: GH can produce growth effect even in animals without pancreas

Statement B: GH requires enough carbohydrate in diet to produce growth effect

1. Both statements A & B are true
2. Both statements A & B are not true
3. Only Statement B is true
4. Only statement A is true
5. Why do pygmies have small stature
6. They have very less circulating somatotropin
7. GH production is ultradian in them
8. They can’t synthesize somatomedins
9. All of the above
10. T ½ of GH & IGF respectively
11. 20min & 20hrs
12. 20 hrs & 20min
13. 10 min & 10hrs
14. 10 hrs & 10 min
15. Number of aa in ACTH
16. 29
17. 39
18. 40
19. 45
20. ACTH stimulates secretion of
21. Cortisol
22. Epinephrine
23. Aldosterone
24. All the above
25. Statement A: ACTH is necessary for release of corticosterone

Statement B: Aldosterone release is influenced by ACTH only in birds

1. Both statements A & B are true
2. Both statements A & B are not true
3. Only Statement B is true
4. Only statement A is true
5. Which protein of pituitary is called ‘big mama’
6. POMC
7. ACTH
8. LPH
9. MSH
10. POMC is synthesized in
11. Pars distalis
12. Corticotropes
13. Pars intermedia
14. All the above
15. Abbreviate CLIP
16. Corticotropin like insulin peptide
17. Calcitonin like intermediate lobe peptide
18. Corticotropin like intermediate lobe peptide
19. Calcitonin like insulin peptide
20. POMC is cleaved into \_\_\_\_\_\_\_\_ in corticotropes
21. ACTH & CLIP
22. LPH & MSH
23. LPH & Endorphins
24. ACTH, LPH & endorphins
25. Lipotropin is derived from \_\_\_\_\_ & is a precursor of \_\_\_\_\_\_\_
26. ACTH & MSH
27. POMC & beta endorphins
28. POMC & ACTH
29. CLIP & POMC
30. Which of the following is true about prolactin
31. Dopamine is a PRL agonist
32. Structurally & functionally overlap with oxytocin
33. It helps in crop milk production in pigeons
34. All the above
35. Prolactin has leuteotropic effect in
36. Cattle
37. Ewes
38. Pigs
39. Horse

1. Brooding behavior in birds is mediated by
2. Oxytocin
3. Renin
4. Prolactin
5. Estrogen
6. PRL has luteolytic effect in \_\_\_\_ species
7. Ewes
8. Sows
9. Rats
10. All the above
11. Statement A: FSH & LH are glycoprotein hormones

Statement B: both of them are made up of 92 aminoacids in α & 115 aminoacids in β chains

1. Both statements A & B are true
2. Both statements A & B are not true
3. Only Statement B is true
4. Only statement A is true
5. Which of the following is not a function of LH
6. Ovulation
7. CL formation
8. Maturation of ovum
9. Reduce testosterone secretion
10. Which among the following are induced ovulators
11. Rat
12. Rabbit
13. Birds
14. All the above
15. LH secretion in induced ovulators is induced by
16. Mating
17. Pheromones
18. Testosterone
19. All the above
20. Statement A: LH is secreted by adenohypophysis

Statement B: LH is secreted by placenta

1. Both statements A & B are true
2. Both statements A & B are not true
3. Only Statement B is true
4. Only statement A is true
5. Which of the following has inhibitory effect on secretion of gonadotropins
6. Estrogen
7. Progesterone
8. FSH
9. All the above
10. Which of the following is not true about inhibin
11. Secreted by graffian follicle
12. Inhibitory effect on FSH & LH
13. Secreted by Sertoli cells
14. Major inhibitory effect is on LH
15. Function of intermedin hormone
16. Skin pigmentation
17. Inhibition of GnRH
18. Inhibitory effect on gonadotropin secretion
19. Stress control
20. Hormones of posterior pituitary are secreted via
21. Pituicytes
22. Hypothalamic tracts
23. Neurotropes of pituitary
24. All the above
25. Statement A: neurohormones of pituitary are synthesized in pituicytes

Statement B: pituicytes are located in anterior pituitary gland

1. Both statements A & B are true
2. Both statements A & B are not true
3. Only Statement B is true
4. Only statement A is true
5. Oxytocin is synthesized in
6. Supraoptic nuclei
7. Supraoxyntic nuclei
8. Paraventricular nuclei
9. Paraatrial nuclei
10. Number of amino acids in vasopressin
11. 9
12. 10
13. 8
14. 11
15. Oxytocin & vasopressin synthesized in hypothalamus are transported to neurohypophysis as
16. Neurohypophysin I
17. Herring bodies
18. Neurophysins
19. All the above
20. Which of the following is function of neurophysins
21. Carrying oxytocin in circulation
22. Transportation of ADH to posterior pituitary
23. Aids attachment of oxytocin to its respective receptors
24. All the above
25. Statement A: ADH structure differs with species

Statement B: T ½ of ADH is 20min

1. Both statements A & B are true
2. Both statements A & B are not true
3. Only Statement B is true
4. Only statement A is true
5. Which of the following species have arginine vasopressin
6. Cattle
7. Man
8. Sheep
9. All the above
10. Lysine vasopressin is of which species
11. Cat
12. Horse
13. Pig
14. Pigeon
15. Arginine vasotocin is produced in
16. Pig
17. Horse
18. Dog
19. Chicken
20. What stimulates ADH secretion
21. Decreased osmolality of body fluids
22. Hypertension
23. Cold environment
24. Hydration
25. Deficiency of ADH leads to
26. Diabetes mellitus
27. Diabetes insipidus
28. Diabetes geriatrica
29. Diabetes juvenile
30. Which of the following is a systemic effect of ADH
31. Smooth muscle constriction
32. Increased frequency of urination
33. Reduced specific gravity of urine
34. All the above
35. How many aminoacids are common between oxytocin & vasopressin
36. 6
37. 7
38. 8
39. 9
40. T ½ of oxytocin is
41. 2 min
42. 20 min
43. 30 min
44. 2 hrs
45. Statement A: Oxytocin has effect on smooth muscle of uterus & mammary gland

Statement B: Oxytocin helps in secretion of PGF2α from endometrium

1. Both statements A & B are true
2. Both statements A & B are not true
3. Only Statement B is true
4. Only statement A is true
5. Which of the following is not an effect of oxytocin
6. Lowers BP in birds
7. Transport of sperms in uterus
8. Brooding behavior of birds
9. Aids Sperm ejaculation
10. Statement A: corpus luteum has ability to produce oxytocin

Statement B: oxytocin has luteolytic effect

1. Both statements A & B are true
2. Both statements A & B are not true
3. Only Statement B is true
4. Only statement A is true
5. What stimulates oxytocin release from CL
6. Progesterone
7. FSH
8. PGF2α
9. All the above
10. Which of the following statements are true
11. Milk let down / suckling reflex is a purely endocrine reflex
12. Estrogen stimulates CL to secrete oxytocin
13. CL can release vasopressin
14. Oxytocin has negative feedback effect on FSH
15. All the above
16. Which of the following is called ‘Butterfly gland’
17. Pineal gland
18. Pituitary
19. Thyroid
20. Uterus
21. Major hormone of thyroid gland is
22. Thyroxine
23. Triiodothyronine
24. Calcitonin
25. Both A&B
26. Which of the following is true
27. Thyroxine is more potent than triiodothyronine
28. Half-life of triiodothyronine is mare than thyroxine
29. Circulating triiodothyronine is less compared to thyroxine
30. Triiodothyronine do not require plasma protein for their transport unlike thyroxine
31. Major component of thyroid colloid
32. Thyroxine
33. Thyroglobulin
34. Thyroalbumin
35. Thyroliberin
36. Location of thyroid lobes in mammals
37. First/ Second tracheal ring
38. At level of clavicle
39. Cranial to larynx
40. Above hyoid apparatus
41. Which of the following is the first stage of thyroid hormone synthesis
42. Colloid production
43. Iodide trapping
44. Iodine to iodide conversion
45. Thyroglobulin synthesis
46. Iodide pump which transports iodine into cuboidal epithelium is a
47. Iodide ATPase pump
48. Sodium iodide symporter
49. Chloride -Iodide pump
50. Potassium iodide symporter
51. Statement A: iodide pump has an ability to increase concentration of iodine inside cuboidal epithelial cell by 30 times that of plasma concentration

Statement B: sodium iodide symporter can concentrate iodide up to 250 times more than that of plasma concentration

1. Both statements A & B are true
2. Both statements A & B are not true
3. Only Statement B is true
4. Only statement A is true
5. Which of the following is not true about thyroid peroxidase enzyme
6. It’s an integral membrane enzyme
7. Oxidation of iodide
8. Iodination of tyrosine in thyroglobulin
9. Mediates exocytosis of thyroglobulin
10. Number of tyrosines available for iodination on Thyroglobulin
11. 35
12. 42
13. 70
14. 75
15. The binding of iodine with the thyroglobulin molecule
16. Colloidation
17. Organification
18. Iodification
19. Peroxidation
20. Tyrosine is first iodized to form
21. T3
22. Monoiodotyrosine
23. Diiodotyrosine
24. T4
25. Thyroxine is formed by
26. 4X organification
27. Dimer of diiodotyrosine only
28. Dimer of 2 MIT with 1 DIT
29. Dimer of TIT & MIT
30. After complete synthesis of thyroid hormones, each thyroglobulin holds how many thyroxines
31. 13
32. 30
33. 45
34. 22
35. Statement A: each thyroglobulin holds 30 thyroxines & few thriidothyronines

Statement B: thyroid gland after a run of hormone synthesis can supply required amount of hormones for 2-3months

1. Both statements A & B are true
2. Both statements A & B are not true
3. Only Statement B is true
4. Only statement A is true
5. Assertion: ¾ th of tyrosines on TG remain as MIT & DIT unable to become thyroid hormones

Reason: Deiodinase enzyme makes iodine in unused MIT & DIT for recycling

1. Both A and R are true and R is the correct explanation of A.
2. Both A and R are true but R is NOT the correct explanation of A.
3. A is true but R is false.
4. A is false but R is true.
5. Both A and R are false.
6. Amount of triiodothyronine delivered to cells for utilization per day is
7. 3g
8. 3 ng
9. 35µg
10. 3.6 fL
11. Major plasma protein that transports thyroid hormones
12. Thyroglobulin
13. Thyroxine-binding globulin
14. Thyroxine-binding prealbumin
15. Albumin.
16. Assertion: Thyroxine hormone have fast onset and long action

Reason: Thyroid hormones are met abolised rapidly

1. Both A and R are true and R is the correct explanation of A.
2. Both A and R are true but R is NOT the correct explanation of A.
3. A is true but R is false.
4. A is false but R is true.
5. Both A and R are false.
6. Statement A: Half life of thyroxine hormone is 15 days

Statement B: action of thyroxine may last as long as 6 weeks to 2 months

1. Both statements A & B are true
2. Both statements A & B are not true
3. Only Statement B is true
4. Only statement A is true
5. After release of thyroxine, there is no effect on the metabolic rate for 2 to 3 days and this period is called
6. Threshold period
7. Latent period
8. Refractory period
9. Maturation period
10. Latent period of triiodothyronine is
11. 2-3 days
12. 2-3 hrs
13. 6-12 hrs
14. 6-12 days
15. Thyroid binding prealbumin is called
16. Transthyretin
17. Transthyrectin
18. Transthyroxin
19. Transthyrine
20. Major thyroid hormone transporting protein thyroid binding globulin is absent in
21. Rabbit
22. Cat
23. Pigeon
24. All the above
25. Which of the following is a function of transthyrectin
26. Transport of thyroxine
27. Transport of vit A
28. All the above
29. None of the above
30. Effect of TSH on thyroid gland
31. Increase follicular size
32. Increase number of cells in follicles
33. Both A&B
34. Only A
35. Statement A: GH is responsible for growth in birds

Statement B: thyroid hormones are essential for differentiation of cells

1. Both statements A & B are true
2. Both statements A & B are not true
3. Only Statement B is true
4. Only statement A is true
5. Which hormone is responsible for metamorphosis and brain development
6. GH
7. Thyroxine
8. Melatonin
9. Dopamine
10. Eruption of antlers in deers is due to \_\_\_\_\_\_\_ hormone
11. GH
12. Testosterone
13. Musk hormones
14. Thyroxine
15. Hormone responsible for Feather moulting and comb development in birds other than sex steroids is
16. GH
17. PRL
18. TH
19. Melatonin
20. Accumulation of mucopolysacharrides under the skin of calves due to deficiency of TH is called
21. Anasarca
22. Myxedema
23. Subcutaneous edema
24. Goiter
25. Statement A: thyroid deficiency can cause increased libido

Statement B: Thyroxine also has galactopoetic effect

1. Both statements A & B are true
2. Both statements A & B are not true
3. Only Statement B is true
4. Only statement A is true
5. Which of the following are not metabolic functions of TH
6. Reduce O2 consumption
7. Gluconeogenesis
8. Insulin mediated glucose absorption
9. Lipolysis
10. Shivering thermogenesis
11. Electric activity in brain
12. B&F
13. E&F
14. A&F
15. A&E
16. Which of the following statements is true regarding thyrotoxicosis
17. Hypersecretion of plasma TSH concentration
18. It is an autoimmune disease
19. Weight gain is primary symptom
20. Accompanied with enophthalmos
21. What is not true regarding grave’s disease
22. Thyroid stimulating antibodies stimulate TSH receptors
23. Cause hypothyroidism
24. TSH levels normal
25. None of the above
26. Non tumorous enlargement of thyroid glands is called
27. Thyroadenoma
28. Thyroma
29. Goiter
30. Thyroiodoma
31. Endemic colloidal goiter occurs as a result of
32. Reduced tyrosine in diet
33. Lack of I2
34. Reduced TSH
35. Increased thyroxine
36. Retarded physical & mental growth in in infants due to thyroid hormone deficiency is
37. Goiter
38. Colloidal goiter
39. Cretinism
40. Addisons disease
41. Enlargement of thyroid gland in endemic goiter is due to
42. Increased secretion of TSH
43. Increased secretion of colloid
44. Increased size of thyroid follicles
45. All the above
46. Which of the following are Goitrogenic compounds
47. Thiourea
48. Thiouracil
49. Thiocarbamates
50. All the above
51. How does thiocyanate cause goiter
52. By binding with circulating iodine
53. Suppressing iodide trapping
54. Stimulates hypothalamus to release TSH
55. Increase thyroglobulin translation
56. How does thiouracil cause goiter
57. Inhibiting action of TPO
58. Increase thyroglobulin translation
59. Suppressing iodide trapping
60. All the above
61. Serum calcium level in horses & layer birds are respectively
62. 9 & 15 mg/dl
63. 15 & 30 mg/dl
64. 13 & 25 mg/dl
65. 9 & 30 mg/dl
66. Number of parathyroid glands in pigs
67. One
68. One pair
69. Two pairs
70. Three
71. Animals with two pairs of PTH glands
72. Cat
73. Buffalo
74. Dogs
75. All the above
76. Which of the following are not cells in parathyroid gland
77. Oxyphill cells
78. Chief cells
79. C- cells
80. None of the above
81. Number of amino acids in PTH
82. 90
83. 35
84. 84
85. 102
86. PTH is secreted by which cells
87. Oxyphill cells
88. Chief cells
89. C- cells
90. Oxyntic cells
91. PTH synthesis & release is regulated by
92. [Ca] in serum
93. [PO4] in serum
94. [Mg] in serum
95. Both A&C
96. Both A&B
97. Fine regulation of calcium is monitored by
98. Calcitonin
99. PTH
100. Calcitriol
101. All the above
102. Mechanism of action of PTH on bone is via
103. Osteoclasts
104. Osteoblasts
105. Lysosomes
106. All the above
107. PTH receptors are present on
108. Osteoclasts
109. Osteoblasts
110. Lysosomes
111. All the above
112. Which of the following is not a function of PTH
113. Activation of Vit D3
114. Increase urinary excretion of K+ & PO4
115. Elevates blood Ca & PO4 concentration
116. Promotes intestinal absorption of Ca
117. Calcitonin is secreted by
118. Thyroid gland
119. Parathyroid gland
120. Kidney
121. All the above
122. Which cells synthesize calcitonin in mammals
123. C cells of parathyroid gland
124. Parafollicular cells of thyroid gland
125. Ultimobronchial glands
126. All the above
127. Statement A: Amphibians can also secrete calcitonin

Statement B: parathyroid glands are absent in amphibians

1. Both statements A & B are true
2. Both statements A & B are not true
3. Only Statement B is true
4. Only statement A is true
5. What is function of ultimobranchial glands
6. Secretion of T3 in reptiles
7. Production of calcitonin in reptiles
8. Production of calcitonin in aquatic animals
9. Secretion of vit D3 in birds
10. Number of amino acids in calcitonin
11. 32
12. 40
13. 57
14. 29
15. Which of the following is not true regarding calcitonin
16. Hypermagnesemia triggers calcitonin
17. GI hormones also stimulate calcitonin release
18. It protects bone during pregnancy & lactation
19. Potentiates osteoclastic bone resorption
20. Statement A: Osteoclasts have calcitonin receptors

Statement B: osteoblasts have receptors for PTH

1. Both statements A & B are true
2. Both statements A & B are not true
3. Only Statement B is true
4. Only statement A is true
5. Effect of calcitonin on kidneys
6. Reduces tubular reabsorption of calcium
7. Renal retention of H+
8. Deactivates vitamin D3
9. None of the above
10. Rate limiting enzyme in the process of Vit D3 synthesis
11. 25- hydroxylase
12. 1-α hydroxylase
13. 7- dehydroxylase
14. 24- hydroxylase
15. 1, 25 dihydroxycholecalciferol is transported to target tissues by
16. Transcalciferin
17. Transcalciferol
18. Transcalcinin
19. Tanscalmodulin
20. Effect of 1, 25 DHCC on intestines
21. Increase synthesis of calmodulin in intestinal cells
22. Increase production of calcium binding protein
23. Increase synthesis of PTH
24. A&B
25. A&C
26. Statement A: calcium level has an effect over insulin secretion

Statement B: increased urinary hydroxy proline in late gestation indicates poor breakdown of bone matrix

* 1. Both statements A & B are true
  2. Both statements A & B are not true
  3. Only Statement B is true
  4. Only statement A is true

1. Rubber jaw syndrome occurs as a result of
2. Chronic hypocalcemia
3. CKD
4. Vit D deficiency
5. All the above
6. Normal blood glucose level in euglycemic pigs
7. 42-80 mg/dl
8. 62-120 mg/dl
9. 70-90 mg/dl
10. 30-40 mg/dl
11. Which of the following is not hyperglycemic hormone
12. GH
13. Adrenaline
14. Cortisol
15. None of the above
16. Which of the following cells are not part of endocrine pancreas
17. α cells
18. F cells
19. C cells
20. D cells
21. Match the following
22. α cells 1. Insulin
23. β cells 2. Pancreatic peptide
24. δ cells 3. Somatotropin
25. F cells 4. Somatostatin

5. Glucagon

1. A-1, B-5, C-4, D-3
2. A-3, B-4, C-1, D-2
3. A-5, B-1, C-4, D-2
4. A-5, B-1, C-3, D-2
5. Number of aminoacids in A & B chain of insulin are
6. 30 & 21
7. 31 & 20
8. 21 & 30
9. 25 &26
10. Half life of insulin
11. 20min
12. 5 min
13. 1 hr
14. None of the above
15. Which of the following is not a significance of C peptide of pro-insulin
16. Required to maintain correct folding of insulin peptide
17. Differentiates type of diabetes
18. Quantification of insulin
19. All the above
20. Statement A: structure of insulin is preserved across species

Statement B: dogs & pigs’ insulin structure are identical

1. Both statements A & B are true
2. Both statements A & B are not true
3. Only Statement B is true
4. Only statement A is true
5. Function of insulin on target tissues
6. Increase availability of glucose to cells
7. Reduce glucose pickup by cells
8. Reduce aminoacid entry
9. Helps potassium & sodium entry into cells
10. Which of the following tissues do not require insulin for glucose uptake
11. Brain
12. RBC
13. Retina
14. Intestinal epithelium
15. All the above
16. Which of the following is not an effect of insulin
17. Phosphorylation of glucose in liver
18. Promote activities of glycogen synthase
19. Increases proteolysis in peripheral tissues
20. None of the above
21. Assertion: insulin is a fat sparer

Reason: insulin increase rate of glucose utilization in body tissues and increase triglyceride synthesis (esterification)

1. Both A and R are true and R is the correct explanation of A.
2. Both A and R are true but R is NOT the correct explanation of A.
3. A is true but R is false.
4. A is false but R is true.
5. Both A and R are false.
6. Which of the following statement is true
7. Insulin is ketogenic
8. Insulin increase β oxidation of fat
9. Calcium is required for insulin release
10. None of the above
11. Which of the following hormones stimulate insulin secretion
12. Progesterone
13. Secretin
14. Gastrin
15. All the above
16. Fasting blood glucose level of a diabetic animal should be more than
17. 125 mg/dl
18. 140 mg/dl
19. 80 mg/dl
20. 115 mg/dl
21. What causes ketonuria in type I diabetic animals
22. Increased activity of hormone sensitive lipase activity
23. Increased fatty acid oxidation
24. Increased Acetyl Co A formation
25. All the above
26. Statement A: BUN is elevated in insulin deficient animals

Statement B: osmodiuresis cause polyuria in diabetic animals

1. Both statements A & B are true
2. Both statements A & B are not true
3. Only Statement B is true
4. Only statement A is true
5. Significance of Glycated hemoglobin
6. Indicates current blood glucose level
7. Indicates type of sugar spike in blood
8. Indicates ability of hemoglobin to reduce blood glucose level
9. Indicates blood glucose level in past 3 months
10. Glucagon is secreted by
11. Acinar cells of pancreas
12. β cells of pancreas
13. L cells of intestine
14. All the above
15. Hormone immunologically similar to pancreatic glucagon produced by small intestines is called
16. Intestinal glucagon
17. Glycitin
18. Glycogenin
19. Glycentin
20. Which of the following is not an effect of glucagon
21. Enzymatic breakdown of triglycerides
22. Synthesis of glycogen
23. Elevation of lipolysis
24. Elevates blood fatty acid levels
25. Effect of glucagon on kidney tubules
26. Resorption of Na
27. Natriuresis
28. Increase glucose excretion
29. Reduce calcium resorption
30. Which of the following is not true about somatostatin
31. Is a neurotransmitter in retina
32. Inhibits insulin & glucagon secretion
33. Reduce GI motility
34. Stimulated by reduced level of amino acids in blood
35. What is the function of pancreatic polpeptide
36. Reduce gut motility
37. Inhibits pancreatic enzyme secretion
38. Increase gall bladder motility
39. Somatostatin potentiates PP action
40. Mineralocorticoids are released from
41. Zona glomerulosa
42. Zona fasciculata
43. Zona reticularis
44. Adrenal medulla
45. Zona reticularis produces
46. Glucocorticoids
47. Estrogen
48. Progesterone
49. All the above
50. Precursor of adrenal cortex hormones
51. Cholesterol
52. Amino acids
53. Peptides
54. Glucose moiety
55. Structural difference between mineralocorticoids and glucocorticoids
56. Hydroxyl group on C 17
57. Carbon chain on C21
58. Hydroxyl group on C 11
59. O2 at C 19
60. Glucocorticoids & mineralocorticoids are \_\_\_\_ type of steroids
61. C-21
62. C-19
63. C-18
64. C-20
65. Assertion: glucocorticoids cannot be secreted zona glomerularis

Reason: only the cells of ZR & ZF has 17-hydroxylase enzyme

1. Both A and R are true and R is the correct explanation of A.
2. Both A and R are true but R is NOT the correct explanation of A.
3. A is true but R is false.
4. A is false but R is true.
5. Both A and R are false.
6. Major Plasma carrier protein of cortisol
7. Transalbumin
8. Transcortin
9. Albumin
10. All the above
11. Major Plasma carrier protein of aldosterone
12. Transalbumin
13. Transcortin
14. Albumin
15. All the above
16. Dexamethasone is \_\_\_ times more anti-inflammatory than cortisol
17. 4x
18. 10x
19. 20x
20. 30x
21. Assertion: Glucocorticoids have anti insulin effect

Reason: glucocorticoids inhibit glucose uptake by cells

1. Both A and R are true and R is the correct explanation of A.
2. Both A and R are true but R is NOT the correct explanation of A.
3. A is true but R is false.
4. A is false but R is true.
5. Both A and R are false.
6. Which of the following is not an effect of glucocorticoid
7. Stimulate diuresis
8. Blocks Vit D activation
9. Inhibition of inflammatory response
10. Supports normal wound healing
11. Statement A: cortisol facilitates in-utero maturation of CNS

Statement B: cortisol helps in milk digestion in young animals

1. Both A and R are true and R is the correct explanation of A.
2. Both A and R are true but R is NOT the correct explanation of A.
3. A is true but R is false.
4. A is false but R is true.
5. Both A and R are false.
6. General adaptation syndrome is mediated by \_\_\_\_ hormone
7. Cortisol
8. Aldosterone
9. Adrenaline
10. ANP
11. Hyper secretion of cortisol causes \_\_\_\_
12. Addison’s disease
13. Cushing’s syndrome
14. Graves disease
15. Jacob disease
16. Which of the following is a natural mineralocorticoid
17. Corticosterone
18. Electrocortin
19. Prednisolone
20. None of the above
21. Synthetic steroid with potent mineralocorticoid activity
22. 9α flurocortisol
23. Prednisolone
24. Dexamethasone
25. Aldosterol
26. Statement A: mineralocorticoid promotes sodium secretion

Statement B: mineralocorticoid promotes potassium retention

1. Both statements A & B are true
2. Both statements A & B are not true
3. Only Statement B is true
4. Only statement A is true
5. JG apparatus of kidney produce \_\_\_\_ on response to low blood pressure
6. Aldosterone
7. Renin
8. Cortisol
9. Vit D
10. Angiotensinogen is produced by
11. Lungs
12. Liver
13. Kidney
14. Brain
15. Angiotensin I is converted to angiotensin II by
16. Renin
17. Rennin
18. ACE
19. Angiokinase I
20. What activates RAAS
21. Hypertension
22. Hypernatremia
23. Hyperkalemia
24. Hypervolemia
25. Which of the following hormone exert opposite effect of renin
26. ACTH
27. Rennin
28. ANP
29. None of the above
30. Site of action of aldosterone
31. PCT
32. DCT
33. Collecting duct
34. A&B
35. B&C
36. Major androgen produced by zona reticularis
37. Androstenedione
38. Androsterone
39. Androstenediene
40. Androsterol
41. Which of the following is adrenal medullar hormone
42. Epinephrine
43. Dopamine
44. All of the above
45. None of the above
46. Assertion: adrenal medulla produces catecholamines & estrogen

Reason: adrenal medulla is a sympathetic ganglion with lost post ganglionic neurons making them secretory cells

1. Both A and R are true and R is the correct explanation of A.
2. Both A and R are true but R is NOT the correct explanation of A.
3. A is true but R is false.
4. A is false but R is true.
5. Both A and R are false.
6. Rate limiting enzyme of catecholamines production
7. Tyrosine hydroxylase
8. DOPA decarboxylase
9. Dopamine hydroxylase
10. Methyl transferase
11. which of the following converts dopamine to norepinephrine
12. Tyrosine hydroxylase
13. DOPA decarboxylase
14. Dopamine hydroxylase
15. Dopamine transferase
16. Statement A: Epinephrine has inhibitory effect on rate limiting enzyme tyrosine hydroxylase

Statement B: dopamine conversion into norepinephrine takes place in cytosol of chromaffin cells

1. Both statements A & B are true
2. Both statements A & B are not true
3. Only Statement B is true
4. Only statement A is true
5. Nor epinephrine to epinephrine conversion is catalyzed by
6. Tyrosine hydroxylase
7. DOPA decarboxylase
8. Dopamine hydroxylase
9. Phenyl ethanolamine N Methyl transferase
10. Catecholamines are degraded by \_\_\_\_
11. COMT
12. MAO
13. TH
14. Both A&B
15. Both A&C
16. Which gland has highest content of serotonin
17. Hypothalamus
18. Pituitary
19. Pineal
20. Adrenal medulla
21. Most important enzyme involved in conversion of serotonin into melatonin
22. COMT
23. MAO
24. TH
25. HOMT hydroxy indole O methyl transferase

1. Number of aminoacids in ANP
2. 125
3. 126
4. 135
5. 136
6. Function of neurotensin produced by illeal mucosa
7. Stimulates RBC production
8. Inhibits GI motility
9. Increase blood pressure
10. Inhibits insulin secretion