**Final term: examination assignment (spring 2020) Instructor: MR Adnan Ahmad sb.**

**Course title: chemical pathology. BS MLT 4th semester.**

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**Q1:**

**ANSWER: Thyroid hormones :**

* The Thyroid is an endocrine gland which are looked and root of the neck on either side of the trachea.
* TSH is necessary for the secretory activities of the thyroid glands.
* While the degradation of thyroid hormones which can occur in the muscles ,liver,and the kidney.
* The potency of T3 is four times more than that of T4.
* Thyroid hormones secretes T3 9%and t4 90%and calcitonim.
* **That rate of secretion of thyroid hormones:**
* Tri iodthyronine=4 to 5 ug/day.
* Thyroxine=80 to 90 ug/day.
* **Plasma level;**
* Total T3=0.12 lg/dl.
* Total T4 =8 Ig/dl.
* **Function of thyroid hormones:**
* To they stimulate growth.
* To increase basal metabolic rate.
* Action on fat metabolism.
* They are action on carbohydrates metabolism.
* They have protein metabolism action.
* Which can action body weight.
* They are action with cardiovascular system.
* **Thyroid function test:**
* Measurement of plasm level of T4 and T3 .
* Measurement of the basal metabolic rate.
* Measurement of TRH and TSH.
* **Plasm level of T4 and T3 .**
* For the hyperthyroidism or hypothyroidism. The most diagnostic test of the direct measurement of concentration of ,free, thyroid hormones in the plasm T3 and T4.
* **Measurement of TRH and TSH.**
* There are all most total absence of these two hormones in hypertension is but in crease in hypothyroidism.

**Q3 :**

**Ans:**

**Hyperthyroidism:**

* That is a disorder in which your thyroid glands makes and release more thyroid hormones than your body needs.
* **Causes,**
* Most common causes.
* **Graves** disease.
* **Toxic** multinodceder goiter.
* **Autonomously** functioning nodule.

**Rare cases:**

* Thyroiditis or other cause of destruction .
* Thyrotoxicosis factitia .
* Iodine excess.
* Strum ovaril.
* **Sign and symptoms:**
* Toxic goiter.
* Increased sweating .
* Decrease body weight.
* Muscular weakness.

**Hypothyroidism:**

* Is a condition in which your thyroid glands does not produce enough of certain crucial hormones.
* Hypothyroidism leads to myxedema in adults and creationism in the children.

**Symptoms:**

* Anemia, fatigue, extreme, somnolence with sleeping disturbance.
* Decreased cardiovascular function such as reduction in rate and force of contraction of the heart.
* Cardiac output and the blood volume .
* Increase the body weight .
* Depressed hair growth.

**For the measurement of plasm T3 and T4.**

* For hyperthyroidism or hypothyroidism. Most accurate diagnostic test direct measurement of concentration of free thyroid hormones plasm t3 and t4 .

**TRH and TSH measurement:**

* There are total almost absence of these two hormones in hyperthyroidism but increased in hypothyroidism. It because of negative feedback mechanisms.
* Hyperthyroidism basal metabolic rate is increased about 30% to 60% Basal metabolic rate decreased in hypothyroidism by 20% to 40%.

**Q2 :**

**Ans : Adrenocortical Hormones.:**

* These are two adrenal glands .
* At the superior pole of the two kidneys.
* 4 gram such.
1. **Adrenal cortex.**
2. **Adrenal medulla.**
3. **Adrenal Medulla:**
* They have central 20% of the glands.
* Related to the sympathetic nerves system.
* It secretes epinephrine and norepinephrine .

2 **Adrenal cortex:**

* They are secretes corticosteroids
* These hormones are all synthesized form the steroid cholesterol and they all have similar chemicals formulas.
* Different very important functions.
* Slight differences in their molecular structure.

**There major types of adrenocortical hormones:**

1. **Mineralcorticoids.**
* They affect the electrolytes minerals of the extracellular fluids sodium and potassium.
* Aldosterone.
* And a small amounts of sex hormones especially, androsenic hormones.
* **Synthesis and secretion of adrenocortical hormones:**

**1.the zona glomerulus.**

* Thin layer of the cell that lies just capsule 15% of the cortex .
* Secrete aldosterone.

**2.the zona fasiculate:**

* Middle and widest layer 75%of the cortex.
* Secrete cortisol and corticosteroid.
* Small amount of adrenal androgens.

**3.the zona reticularis.**

* They deep layer of the cortex.
* Secrete dehydration progesterone.
* The controlled the secretion of ACTH.
* **Adrenocortical hormones are steroids from cholesterol.**
* They synthesized denote small amount of cholesterol from acetate.
* Approximately 80% cholesterol used of steroids synthesis.
* Provided by low density cipoproteis
* Transport of cholesterol is regulated the feedback mechanism.

**Q5:**

**Ans : Sex hormones:**

* They are chemical messenger that the endocrine glands produce and release into the bloodstream.
* Hormones help regulate many bodily processes, such as appetite, sleep, and growth.
* Sex hormones are those that play on essential role in sexual development and reproduction.
* The main glands that produce sex hormones are the adrenal glands and the gonads.
* Which includes the ovaries of the females and tests of the males.
* Sex hormones are important of range of body function and person general health.

**Sex hormones involved:**

* Puberty and sexual development.
* Reproduction.
* Sexual desire.
* Inflammatory responses.
* Regulating cholesterol levels.
* Promoting hair growth.

**Q 4.**

**Ans: calcium regulated:**

* Blood calcium level are regulated by parathyroid hormones, which is produced by the parathyroid gland.
* PTH is released in response to low blood calcium level.
* It increases calcium level by targeting the skeleton the kidneys and the intestine.

**Osteomalacia::**

* **Definition:** is a disease characterized by the softening of the bones caused by impaired bone metabolism primarily due to inadequate levels of available phosphate, calcium, and vitamins D. The important of bone metabolism causes inadequate bone mineralization.

**Symptoms::**

* Pain or tenderness in the bone .
* Muscle spasms and cramps.
* Muscle weakness.
* Waddling gait.
* Feeling of pains and needles.