**DPT 6th**

**Course Title: Pharmacology II**

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**Note:**

**Attempt all questions**

**Each question carry equal marks**

**Pay attention to every point of question**

**Give to the point answers**

**Extra detail may leads to marks deduction**

1.
2. **How cryotherapy is effective in pain and edema? Explain the mechanism of agents that synergize and antagonize its effect with appropriate example.**

**Answer no # 1st :**

 **Part a :- cryotherapy :-**

* use for theraputic purpose.
* Removal of heat from Body.

 **:-effective of cryotherapy:-**

 ***Pain*:-**

In a condition of pain first we apply cooling to the area of pain than it activated the cold receptors of sensory signals of posterior horns of the spinal cord .fibers are in a large diameter large diameter is much faster than small diameter so cooling have large diameter nerve fiber and pain have small diameter nerve fiber than when activat the cold receptors than it's stop the small diameter of nerve fiber and also we provide strengthning exercise and different types of other exercises is also given .

 ***Edema*:-**

In the condition of edema when we apply cryotherapy on the body to preseve the heat so in it vasoconstriction will occure after vasoconstriction their have the process of anstamosis and it's gradually decrease the blood process to that area in circultory response their have high blood pressure high oxygen also increased nutrients . capillaries exchange blood through duffusion which is most effective for healing.And it's continually contraction and relaxtion it reduce the metabolic rate .

**Mechanism of action that synergies:-**

 When we admister NSAIDs it's will increase with cryotherapy .NSAIDs work by inhibiting the activity of cyclogenenase enzyme ( cox-1 or coX-2 ). In cells these enzymes are involved in the synthesis of key biological mediators namely prostaglandin ,which are involved in inflammation and thromboxanes ,which are involved in blood clotting..

**Example:-**

 Aspirin

**Antagonize effect:-**

 Vasodilator used for antagonize when we apply cryotherapy to the body than it's slow down the effect because it's used for hand and foot and they doesn't want to allow the body for vasoconstriction so when antagonize is applied peripherally it's may exacerbate to start acute local edema.

***Example***

Colinergic agonist

**Vasodilator** agents :-

Acetylcholine

Metacholine

Betanachol

Nicotine

Atropine

Hexamethonine

 **Part b .**

**Ans:- Theraputic application :-**

 ***Systemic heat:***-

 There have used of some Theraputic modalities like whirlpool and Hubbard tanker we also called it hydrotherapy. It's used for pain ,edema , swelling and spasticity . It's decease the stiffness of joint and muscle .

**Agents** :-

 Opoid

 Non opoid

Analgesics

 Skeletal muscles relaxtants

 Local anestatic.

1. **What is the main function of menstrual cycle? Enumerate its phases, write down each of the hormone name only that is dominant in each phase, explain termination phase in detail.**

***Answer*:- menstrual cycle:-**

Also called as female reproductive cycle. It's prepare the urtrus for pregnancy.

 **function of menstrual cycle:**

Menstrual cycle is natural regular chnage that occurs in female reproductive system specifically in uterus and ovaries that makes pregnancy possible, this cycle is necessary for preparation of uterus for pregnancy.

**Phases of menstrual cycle :**

Follicular phase:

Anterior pituitary releases--> FSH

Maturation of ovum--> release of estrogen--> thickening of endometrium.

Dominant hormone: follicle stimulating hormone (FSH)

**Ovulation**:

Anterior pituitary---> leutinizing hormone

Release of ovum into ducts--> travels to uterus via Fallopian tube.

Dominant hormone: leutinizing hormone (LH)

**Leuteal phase:**

Remaining follicles infused with lipids--> form carpus Leuteum

After release of ovum carpus leuteum remain there for 1 week--> release estrogen and progestron during 1 week

Effects of estrogen and progesterone is to thicken uterine lining, also progesterone increase chances of pregnancy.

Dominant hormones: estrogen and progesterone.

**Termination and carpus leuteum regretion:**

If fertilization do not occur at 3rd sstag--> the implantation of egg stops

Carpus leuteum will go back ( capability decreased)

*The lining of o uterus* ( endometrium) will start shedding again, and teases as blood from female reproductive organ

This onset of bleeding represents end of one cycle and start of another.

**Ans:- 3rd**

 **Glucocorticoid**:-

 These are involved to control with the stress .they also deal with the glucose metabolism.

Glucocorticoid help to reducing the or we can say it decreases the information swelling.its also supress our immune system.

***Effects***:-

 **On glucose,protein and lipid metabolism:-**

 In our body when cortisol is released it dose protein and fate break down in cells of muscles are fats as a outcome of this fatty acids are released from fats breakdown and amino acids released when breakdown of protein occur so these two things therefore amino acids and fatty acids these both are used in glucogeo geneses which a process inside the liver of glucose thesis.

Glucose can be released inside the body is the production is done so it can be stored as in the form glycogen inside the liver cell . The net effect is that cortisol increases glucose thesis protein breakdown increase and lipid breakdown will also increase.

**Part b ) How mineralocorticoids maintain the plasma volume?**

**Answer :-**

 **Explainaion:-**

When blood pressure decease it's activate angiotensin ll system which produce angiotensin factor which causes vasoconstriction and increase blood pressure.

On the other hand it's also maintain the adequate volume of plasma it's facilitate the antihypertensive effect and stamulate the release of aldosterone through kidney which facilitates the sodium and water retention and this is how mineralocorticoids maintain the plasma volume.

**Answer.no 4 ;**

**Diabetes:**

 Pancreatic disease in which in which blood glucose or blood sugar levels are too high.

It's occur when body doesn't produce enough insulin in pancreas.

Insulin is the harmone that helps the glucose to get into cells to give them energy. Simply mean it's regulate blood sugar.

On single occasion diabetes as fasting blood glucose more than 126mg/dl on one single occasion. Or 200mg/dl or more 2 and or more occasion random blood.

**Type 1 diabetes mellitus:**

* Insulin dependent.
* Form of chronic hyperglycemia caused by immunologic destruction of pancreatic beta cells. Means
* Deficient insulin production. Because our body start action against B cells and destroyed it. Due to which pancreatic b cells doesn't produce.
* Mostly in Young age .
* No family history involved.
* It is autoimmune disease
* Cause is unknown
* Insulin not produce

**Type 2 diabetes mellitus.**

* With the passage of time our body start resistance to insulin which resist harmone. So insulin will not prouduce so insulin resistance lead to diabetes **.**
* onset. Gradual mainly in adults.
* Faimly history involved**.**
* Due to excess of body weight and physical inactivity.
* It is metabolic condition.
* Some can be also cause genetically

**(B) As per your opinion which of the insulin delivery device is more effective**

**Part b) : insulin delivery devices** :-

* Syring
* Insulin pen
* Insulin pump
* Jet injection

***Effective way of insulin delivery as per my opinion.:-***  is syring when we inject it in body it's become part of blood stream and in short time it give effective effects . Need short time to produce effects . that why I think it's an effective way of insulin delivery.

Insulin is present in many other forms like ***rapid acting insulin*** which give fast effect in just 15 min and work for 4 hrs

***Short acting insulin*** : with 30 min it work for 6 hrs

***Intermediate insulin*** enter in blood stream in 4hrs and work for 18hrs

***Long acting*** take more time but work for maximum 24hrs it keep glucose level.

**Q:5.**

1. **Define iontophoresis, explain the mechanistic approach behind iontophoresis.**

**Answer**. **Iontophoresis:-**

Specialized techniqueMeans ions transfer or transfer of drugs molecules to body through skin with the help of electric stimulation.

The iontophoresis is defined as transfer of ion (ionto = ion; phoresis = transfer).

Introduction of ions into the body using DC (direct electrical current)

It is a specialized technique of electrical stimulation that uses electrical polarity of direct current to ionize medicines present on skin surface and transfers them into the body through the skin.

**Mechanism:-**

Below the dermis and epidermis there are blood molecules and tissues. As we applied ther drugs on skin in gell form

There positive charge present and below we connectt cathode which is negatively charge so as we know that charges move from positive toward negative

So cathode help the drug move from positive charge to negative. Which create pressure which enhance the drugs movement and absorbtion of drugs into body Through skin .

1. **Explain the general mechanism of hormone release and inhibition?**

**Answer:- Mechanism:-**

During biological needs of our body if need harmones .and body get stimuli's . Signls arise if we need or not if we need this it transfer to target cell . harmone are synthesis from the secretary cell to the extracellular fluid from ECF it will move towards the target cells. Harmone start interaction with target cell some harmone will be degrade

Ther target harmone give feedback signals towards harmones releasing center and inhibit the further release of harmone. So thats the mechanism how Harmon release and inhibit.