

ANSWER 1:-

In general, cryotherapy affects the body in a number of ways including reducing blood flow to an injured area (thereby reducing swelling), acting as an analgesic (numbing agent), reducing muscle spasm and reducing tissue metabolism.

## DRUGS:-

When two drugs are used together, their effects can be additive (the result is what you expect when you add together the effect of each drug taken independently), synergistic (combining the drugs leads to a larger effect than expected) or antagonistic (combining the drugs leads to a smaller effect than expected).

### 1) EXAMPLE OF SYNERGIC EFFECT:-

In comparison, a synergistic effect of two situation where the combined effect of two chemicals is much greater than the sum of the effects of each agent give a lone

(e.g):-  $2 + 2 > 4$  (maybe 10 times or more)

## \* EXAMPLE OF ANTIAGONISM:

In chemistry, antagonism is a phenomenon wherein two or more agents in combination have an overall effect that is less the sum of their individual effects. The opposite of antagonism is synergy. It is a negative type of synergism.

## B) HEAT THERAPY USED FOR:-

As a most commonly used in rehabilitation, the therapeutic effects of heat include increasing the extensibility of collagen tissues, decreasing joint stiffness, reducing pain, relieving muscle spasms, reducing inflammation, edema and aids in the postacute phase of healing and increasing blood flow. Heat therapy works by improving circulation and blood flow to a particular area. Due to increased temperature of the afflicted area even slightly can soothe discomfort and increase muscle flexibility. Heat therapy can relax and soothe muscles and heal damaged tissue.

## => THERAPEUTIC RESPONSE:

A therapeutic response

is a consequence of a medical treatment of any kind, the results of which are judged to be desirable and beneficial. This is true whether the result was expected, unexpected, or even an unintended consequence of the treatment. An adverse effect, on the other hand, is a harmful & undesired effect.

\*) FOR EXAMPLE:-

An individual taking aspirin for their heart would consider the therapeutic effect to be the prevention of heart attacks. When aspirin is taken for a headache, however, the desired result would be a reduction in pain.

\*) Related Journals of Therapeutic Response:-

⇒ Nanomedicine and Biotherapeutic discovery, Cancer Medicine & Anti Cancer Drugs, Nephrology and Therapeutics, Lung Cancer Diagnosis and Treatment, Novel Physiotherapies, Annals of Oncology, Nature Center of Journal Therapy

## QUESTION 2:-

### MENSTRUAL CYCLE:-

The menstrual cycle is the regular natural change that occurs in the female reproductive system (specifically the uterus and ovaries) that makes pregnancy possible. The cycle is required for the production of oocytes, and for the preparation of the uterus for pregnancy.

### => MENSURATION:-

The period - the shedding of the uterine lining. Levels of estrogen and progesterone are low

### => PHASES:-

#### 1) Follicular phase:-

The time between the first day of the period and ovulation.

#### 2) LUTEAL PHASE:-

The time between ovulation and before the start of menstruation, when the body prepares for a possible pregnancy.

3) Ovulation: Just prior to the cycle's midpoint, the anterior pituitary secretes a sudden, large burst of LH. A smaller burst of FSH secretion also occurs around the midpoint of the cycle. During ovulation, the mature follicle ruptures, releasing the ovum from the ovary. At this point, the ovum should begin to travel toward the uterus via the fallopian tubes.

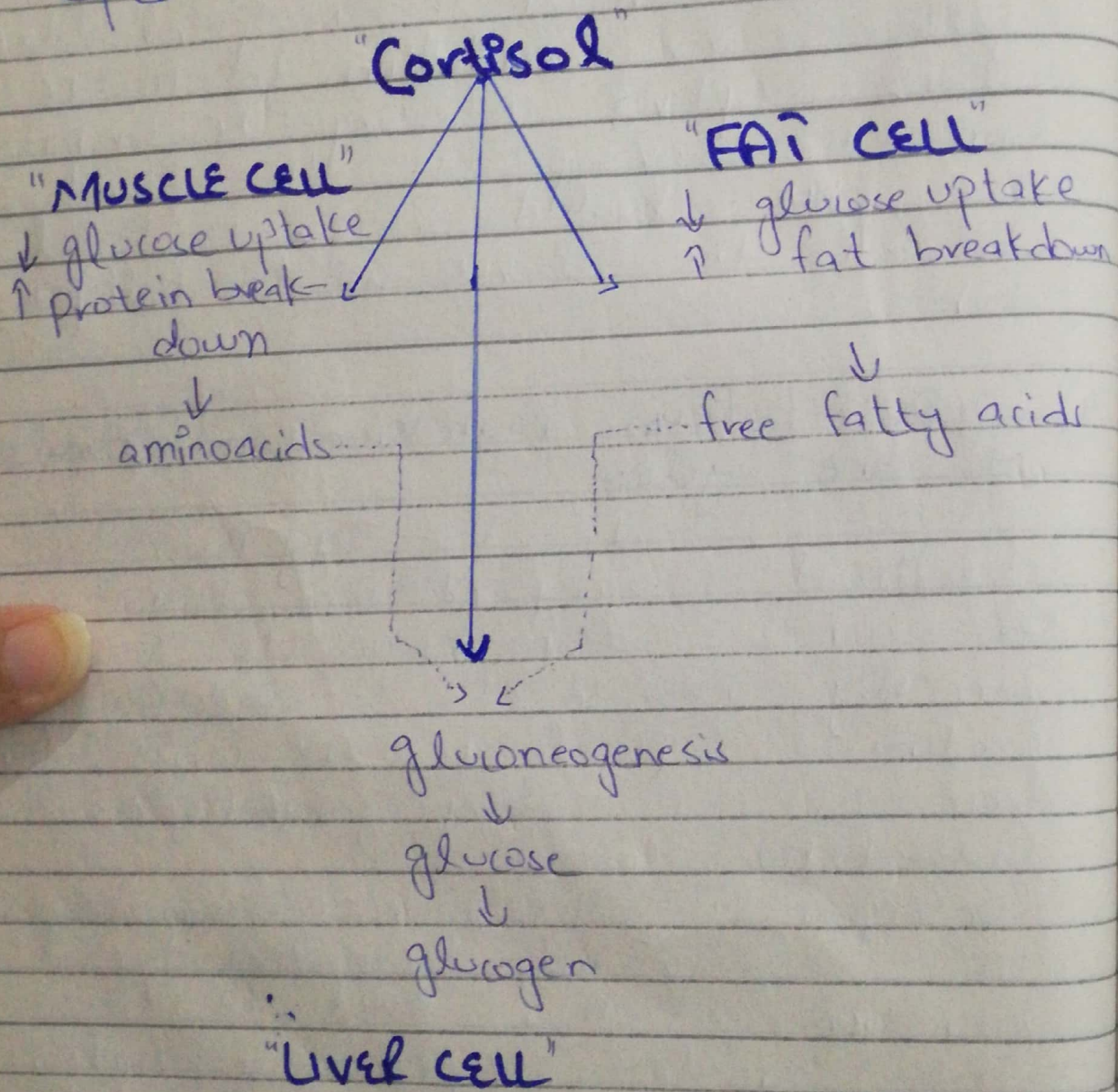
4) Corpus luteum regression and termination of the cycle:

If the egg is not fertilized or implantation does not occur, the corpus luteum begins to regress, primarily because of a lack of continued support for the corpus luteum from the pituitary gonadotrophins (LH, FSH).

Consequently, the endometrium begins to slough off, creating the menstrual bleeding that typifies the female reproductive cycle. The onset of menstrual bleeding marks the end of one reproductive cycle and the beginning of the next.

# QUESTION 3 :- PHYSIOLOGICAL EFFECTS OF CORTISOL - TIPS:-

1) Effects on Glucose, Protein and Lipid Metabolism:-



Effects of cortisol on muscle, fat and liver cells. Cortisol causes the breakdown of muscle and fat into amino acids, which can be used by the liver to produce glucose.

## 2) ANTI-INFLAMMATORY EFFECTS:

1) Glucocorticoids often inhibit transcription factors that normally stimulate genes within specific cells to express inflammatory components.

→ For example:-

Act on macrophages, lymphocytes and endothelial cells to inhibit the expression of inflammatory proteins (cytokines) such as interleukin-1, interleukin-6, tissue necrosis factor alpha, interleukin gamma, & similar inflammatory cytokines.

2) Inhibit the production of other pro-inflammatory substances such as prostaglandins and leukotrienes.

3) Finally, high doses of glucocorticoids appear to stabilize lysosomal membranes thereby making them less fragile and susceptible to rupture.

(B)

## \*) Mineral corticoids:-

The principal mineral corticoid in humans is aldosterone.

⇒ Regulation of Mineral corticoid secretion:-

A primary stimulus for aldosterone release is increased levels of angiotensin II. Angiotensin II is part of the renin-angiotensin system which is concerned with maintaining blood pressure.

⇒ Basically, a sudden fall in blood pressure initiates a chain of events that generates increased circulating levels of angiotensin II. Angiotensin II helps maintain blood pressure by vasoconstricting peripheral vessels.

⇒ Angiotensin II (and probably also its metabolic byproduct angiotensin III) helps exert a more prolonged antihypotensive effect by stimulating aldosterone secretion from the adrenal cortex.

⇒ Aldosterone can then facilitate sodium and water retention, thus maintaining adequate plasma volume.

## QUESTION 5:-

### Iontophoresis:-

The term iontophoresis is simply defined as ion transfer (ionto = ion; phoresis = transfer). Introduction of ions into the body



using direct electrical current.  
→ It is a specialised technique of electrical current.  
→ It is a specialised technique of electrical stimulation that uses electrical polarity of contin. direct current to ionize medicines placed beneath surface electrodes and transfers them into the body through the skin.

### \*) USES:-

Iontophoresis uses electrical current to transport ions into tissues.

### 3) HORMONE:-

A hormone is typically regarded as a chemical messenger that is released into the bloodstream to exert an effect on target cells located some distance from the hormonal release site.

→ A substance that is released in one tissue and travels through the circulation (usually) to the target tissue.

→ Hormones reach all parts of the body, but only target cells are equipped to respond.

→) Hormones are secreted in small amounts and often in bursts (pulsatile secretion).

## \* CLASSES OF HORMONES:-

1) Peptide / Protein (Range from 3 amino acids to hundreds of amino acids in size.)

2) Steroid.

3) Amine (Thyroid hormones and catecholamines)

4) Eicosanoid (Fatty acid and derivatives)

## \* Categories of Hormones:-

The hormones fall into two general classes based on their solubility in water.

1) The water soluble (amine (epinephrine) and peptide / protein hormones) are secreted by exocytosis, travel freely in the bloodstream, and bind to cell surface receptors

2) The lipid soluble hormones (thyroid hormone, steroid hormones and

vitamin D<sub>3</sub>). Diffuse across cell membranes, travels in the bloodstream bound to transport proteins, and diffuse through the membrane of target cells.

\*) SOURCES OF HORMONES:-

1) Natural:-

Human (GH, LH & FSH, hCG),  
Animal (Insulin, T<sub>3</sub> & T<sub>4</sub>).

2) Biosynthetic:-

Insulin (Porcine & Bovine)

3) SYNTHETIC:-

1) On cell surface:-  
Peptides and proteins.

2) In cytoplasm:-  
Steroids.

3) In nucleus:-  
Thyroid hormones.

## Q4) TYPE 1 Mellitus

★) What is happening?

⇒ Your body attacks the cells in your pancreas which means it cannot make any insulin.

★) RISK FACTORS:-

⇒ we don't currently know what cause Type 1 diabetes.

★) SYMPTOMS:-

⇒ The symptoms for Type 1 appear more quickly.

★) Management:-

⇒ Type 1 is managed by taking insulin to control your blood sugar.

## TYPE 2 Mellitus

⇒ Your body is unable to make enough insulin or the insulin you do make doesn't work properly.

⇒ we know some things can put you at risk of having Type 2 like weight and ethnicity.

⇒ Type 2 symptoms can be easier to miss because they appear more slowly.

⇒ You can manage Type 2 diabetes in more ways than Type 1. These include through medication, exercise & diet. People with Type 2

can also be prescribed insulin.

#### \* Cure & Prevention:-

→ Currently there is no cure for Type 1 but research continues.

→ Type 2 cannot be cured but there is evidence to say in many cases it can be prevented & put into remission.

### B) INSULIN PUMPS:-

The best insulin pumps on the market.

#### 1) Types of insulin pumps.

- 1) Medtronic:- The Minimed 530 G system.
- 2) Medtronic:- Minimed 630 G system.
- 3) Insulet Corporation:- Omnipod.
- 4) Tandem Diabetes care:- t:slim:

#### ⇒ NEWEST INSULIN PUMP:-

The tandem Diabetes care t:slim X2 insulin pump, an alternate controller enabled infusion pump, or ACE insulin pump, is the first interoperable pump, meaning

it can be used with different components that make up diabetes therapy systems, allowing patients to tailor their diabetes management to their individual device.