**Mid-Term Assignment (Spring-20) (DPT 6th Semester)**

**Course Title: Physical Agents and Electrotherapy-ll Instructor: Dr. Maria Feroze**

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**Student Id: 14114.**

**Time: 48 hours Max Marks: 30**

**Note:**

* **You can use Google/ Google Scholar as a source of help but refrain from copy pasting the data directly from these sources.**
* **More than 25% plagiarism in your answer will not be acceptable.**
* **Attempt all questions from this section, all questions carry equal marks.**

**Q1. Write in your own words:**

1. **What is the difference between 1 g of ice at 0°C and 1 g of water at 37°C?**

**Answer:** **Difference:**

We know that the energy flows from high potential to low potential thus the energy present in the body moves towards the ice or cold water now the main difference between 1g of ice at 0℃ and 1g of water at 37℃ is that if we take ice of 1g at 0℃ it will take more energy of 491 Joules to reach to 37℃ while if we take cold water of 1g then it will take less energy of 115 Joules and thus our therapy will not be helpful thus we must prefer ice over cold water.Thus the difference between 1g of water at 0℃ and 1g of water at 37℃ is the energy use.

1. **Explain why the rate of conduction of nerve fibers in a mixed (motor and sensory) peripheral nerve is reduced by cooling.**

**Answer:** **Effect by cooling:**

The effect of changing temperature on nerve fibers of peripheral nerves varies with temperature, at a stable temperature of 31-32℃ the cold receptors had an ongoing discharge of nerve terminal impulses. This activity is directly proportional to the temperature i-e reduced temperature or cooling will directly reduce the respective effects and the frequency of the impulses is also reduced.

1. **Why is Cryotherapy contraindicated in cardiac patients?**

**Answer:** **Cryotherapy for Cardiac patients:**

In Cryotherapy we know that we use Ice and the use of ice on body causes vasoconstriction due to which increase in blood pressure occurs as a result heart problems can occur. Now people who have cardiac problems are in risk to have cryotherapy that’s the reason it is Contraindicated in Cardiac Patients.

1. **Write in detail the uses of ice cube massage?**

**Answer: Uses of Ice-cubing Massage:**

1. The Ice cube massage can be used to relive pain.(use of ice packs on injured areas like knee or ankle etc can be relived.)
2. It can be used for Counter Irritant Action and Muscle simulations.
3. It can be used for neurological Facilitation in the body.
4. Can be used for Skin care i-e face beauty etc.
5. Ice cube massage can be used to Improves blood circulation in the body.
6. Can be used to erase swelling and inflammation.
7. It also soothes Sunburns if happened to anyone.

**Q2. Explain how Cryotherapy reduces:**

1. **Pain:**

Cryotherapy can reduce pain in a number of ways it can effect the nerve signals and slow down their transmission which may reduce the amount of pain signals to the brain. Sometimes the level of chemicals are also reduced that are produced due to stress by cryotherapy. Moreover it can also reduced inflammation which a much painful.

1. **Spasticity:**

When the upper motor neurons are damaged due to which muscle tone is increased, this state is known as Spasticity. The horncell which is small and is present anterior, from the higher control of extra pyramidal system and fires spontaneously at an increased rate. The net result of this is ultimate to increase the tone in the extrafusal muscle fibers when the hypertonic spastic state appears.

**Q3. A) Differentiate between luminous and non-luminous generators. (At least ten differences)**

**Answer:**

**Difference Between Luminous and Non-luminous Generators:**

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| --- | --- |
| **Non-luminous Generators**1. A coil of wire wound on a cylinder of some insulating material.
2. Electric current passes through wire and produces Heat.
3. IRR is emitted by hot wire.
4. It produces IRR and Some visible rays.
5. Does not penetrates deeply into skin.
6. It penetrates to Epidermis & Superficial dermis.
7. These rays are mostly absorbed by the skin.
8. The rays produced by this generator are used in Therapeutic effect which is mostly due to sensory heating.
9. Treatment time is 20-30 minutes.
10. It is used for Acute Conditions.
 | **Luminous Generators**1. Luminous generator are produced by incandescent lamps.
2. This generators consists of Tungsten Filament which contain inert gas at low pressure.
3. Inside glass is covered with silvered to provide reflection.
4. This generators produces Infrared Rays and Ultra Violet Rays.
5. Outside light is red which absorb green and blue rays.
6. Human skin absorbs 95% of energy if it is perpendicular to surface.
7. Penetrates more into the skin as compare to non luminous and penetrates to Epidermis,dermis & subcutaneous tissues.
8. More efficient tissue heating.
9. Treatment time is 15-20 minutes.
10. It is used for Chronic Inflammation.
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1. **Are infra-red rays more effective in relieving the pain than Ultraviolet (UV) light or not? Give evidence to support you answer.**

**Answer:**

Infrared light therapy is one of the most effective therapy which is used to get red of the chronic and acute pain found in patients.Unlike Ultraviolet light rays which has damaging effects upon the tissues and cells of the body, Infrared light helps the cells to regenerate or repair the them,moreover infrared rays improves the circulation of oxygen in the blood due to which it leads to faster healing of deep tissues and relieving pain. Moreover Infrared light penetrates deep into skin due to which it provides much greater depth due to which it is able to effectively give relief in pain.

**Evidence Article Link:**

**http://www.news-medical.net/amp/health/how-Does-infrared-Therapy-Work.aspx**