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

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

**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.**

**Usman ghani**

**Id 13616**

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?

**Ans**) In cryotherapy we always use ice because the temperature of 1g of ice is 0℃ and it required 491j energy to melt rather than water because water required 115 j energy to remove heat from the body.so if we want to remove more heat from the body then we will use ice instead of water .The only difference between 1g of ice at 0℃ and 1g of water at 37 ℃ is energy required and heat removal from the body .the ice remove more heat from the body as campare to the water .

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

Ans ) there are a lots of primary thermal receptor in the skin .in cold receptor are greater than warm .because the cold receptor reply to cooling by a constant discharge of impulses ,the rate of which increase with additional cooling .

The rate of conduction of nerve fiber in a mixed (motor and sensory) peripheral nerve is reduced by cooling .The first nerve fiber affected by ongoing cooling are the A fiber which is mylinated one and ultimately at very low temperature the B and C fiber which is non mylinated are posh .on the other hand synaptic conduction can also be stuck .

1. Why is Cryotherapy contraindicated in cardiac patients?

If the patient have any cardiac history then we cant apply the cryotherapy because we know that with ice the vasoconstriction occur due to which there are increase in blood pressure similarly the increased blood pressure is the burden on the on the whole circulatory system .for example a patient have spasticity on his left shoulder come which also have a cardiac condition .because the sympathetic nerve supply of shoulder and heart is the same if we apply the ice therapy the nerve will activate and its may become a big problem .

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

For the relief of pain ice block is progressed over the part using relaxed round massage .for the neurological facilitation the ice should be useful only momentarily.

**Uses of ice cube massage**

* Counter irritant action
* Muscles stimulation
* Muscles strain
* Contusion
* Acute or chronic pain
* Inflammation

Q2. Explain how Cryotherapy reduces:

1. Pain

Pain reduction is one of the major effect of cryotherapy .Which has been practice for many years .the possible tool is that by the stimulation of cold receptors which is large in diameter which is activated with cold and suppressed the warm receptor which give us the pain sensation and small in daimeter .Impulses will refer back which will pass into the posterior root of the spinal cord .These impulses received trough large diameter nerve affectively chunk out any other pain impulse trying to entree the spinal cord ,and thus reduce the pain.

**Pain Gait theory**

Pain gait theory reduce the pain for the time being for everlasting pain relief positive physiotherapy strengthening, mobilization has to be given through this period of passing pain relief .

1. Spasticity

Spasticity is the pathological state of enlarged muscle tone causing from demaged of the upper moter neuron .the slight interior horn cell from the higher measured of extra pyramidal system and fire unexpectedly at an increased rate .the clear result of that is finally to increased tone in the extra fusal muscle fibers when the hypertonic spastic state looks.When we apply the ice therapy the motor signals become slow down the muscles contraction become slow due to the gradual nerve conduction .and hence there will be no increase in muscles tone .

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

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| **Contents**  | **Luminous**  | **Non luminous**  |
| Detachment  | 40 \_60cm from treated area  | 75 to 90 cm from treated area  |
| Physiological effects  | Pain reduction via counter irritant effect  | Pain reduction through sedative effect  |
| Practices  | Chronic inflammation  | Acute condition  |
| Treatment time  | 15 to20 min luminous  | 20 to 30 mint  |
| Penetration  | All layers of skin  | Epidermis and stratum corneum  |
| Wave length  | 350 to 4000nm (max 1000nm)  | 1500 to 12000nm (max4000nm) |
| Radiation  | 70% IRR ,24% far IRR ,5% visible light and 1 % UV  | 90% far IRR ,10% near IRR |
| Cause and type  | Electrically heated filament e.g ,quartz lamp, tungsten lamp | Electrically heated resistance Wire coiled it take about 5 to 15 mint to be heated and emit their max intensity e.g hot pack |
| Penetration  | Depth of penetration is 1 to 10 mm | Less penetration than luminous  |
| Treatment  | More effective  | Less effective  |

1. Are infra-red rays more effective in relieving the pain than Ultraviolet (UV) light or not? Give evidence to support you answer.

Ans : anecdotes suggest ultraviolet rays may be some benefits. Additionally, UV rays exposure resulting in positive effect well-being, relaxation, and reduce pain level when compare.

Evidence base pain of trapezius.

While infra-red rays is one of the best innovative therapies that are being trialed for the management of patient with acute or chronic pain. Infra-red light also improve the oxygen, rich blood supply to the body.

In evidence base is acute pain at shoulder (frozen shoulder).