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

**Course Title: Phyical Agents and Electrotherapy II**

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Q1)  
  
A)** At 0 degree, ice is solid with regular tetrhahedral structure. On atomic level, two of its corners are occupied by the two Oxygens and the other two by the lone pair of electrons. There exist strong intermolecular forces at lower temprature while density decreases due to creation of empty spaces.  
While at 37 degrees, water is present in liquid/aqueous state. Intermolecular foces are weaker than in ice but in this state it acts as a good solvent. intermolecular bonds continously break and reform.

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B**) Decrease in temperature causes an decrease in the rate of diffusion of ions across the membrane thus thier is a delay in action potential. This is the reason why speed of conduction of impulse by Mixed Peripheral Nerve decreases on cooling.  
  
 **C**) Although caryotherapy is good for reducing muscle pain and is effective in rheumatoid arthritis however cardiac patients on the other hand are sensitive to it.

The reason is that due to low temperature treatment vasoconstriction takes place that causes high blood pressure**.** The body tends to maintain normal body temperature so it starts metabolism as a result heart pumps at higher rate and supply blood to whole body. And due to this reason carrier therapy is contradicted in cardiac patients.  
  
**D**) Applying ice cube or low-temperature treatment for health purposes is called caryotherapy.  
Uses are as follow:  
Ease pain by temporarily reducing nerve activity.

Lessen swelling by reduced bloodflow.

Speed up functional recovery by tissue healing.

Boost the skin healthy glow.

Eliminate puffiness especially around the eyes by reducing bloodflow.

Reduce signs of ageing.

Reduce oil production by closing skin pores.

Reduces acne by reducing bloodflow and closes pores.

It helps in relieving sprains

It can help reduce dark circles.  
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**Q2)   
Treatment of Pain and Spasticity by Cryotherapy:  
 A**) Spasticity is usually treated with medicines and exercises but cryotherapy helps reduce spasticity by reducing nerve impulse from the brain, slowing nervous activity by reducing conduction rate via slow iconic distribution that result in delayed action potential of neurons.

**B)** It reduces pain by two methods:  
1) Cryotherapy it causes vasoconstriction – reduces inflammation, reduced inflammationexert low pressure on nerves resulting in reduced pressure.  
2) it slows down nerve action by distributing and slowing and conduction across membranes as a result it reduces pain.  
  
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**Q3   
A) Differences of Luminous and Non-Luminous Generators:**

* **The objects which are able to emit the light of their own known as liminous objects and on the other hand non luminous objects just reflects the light of other source but hasnt its own source**
* **Luminious: sun, moon, burning candle.**
* **Non luminious: book, chair, pen etc**

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B)** Infrared rays are more effective than UV in relieving pain because UV have small wavelength and cause damage to the skin cells that can lead to cancer it can also cause mutation on the other hand IR rays are safe to apply to the body.   
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