

Short question Electrotherapy-3

(Each question is for 2(two) marks)

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1. **Define Rheostat:** Rheostat is a device used to regulate current by altering either the resistance of the current or potential in the part of the circuit. It consists of a coil of high resistance wire wound onto an insulating block with each turn insulated from adjacent turns. They are two types Series rheostat, Shunt rheostat
2. **Joule's law:** The amount of heat produced in a conductor is directly proportional to the square of current, the resistance, and the time for which the current flows. This is given by: $Q = I^2Rt$, Where, I = current in amperes, R = resistance in Ohms, t = time in seconds. This equation is known as Joule's Law of heating.
3. **Atom:** An atom can be described as the smallest particle of an element. It contains the central nucleus in which two particles protons and neutrons are held together by strong nuclear forces and are surrounded by negatively charged particles called electrons. The diameter of the atom is of the order of 10^{-10}m .
4. **Wallerian degeneration:** Severe injury to the nerve causes damage to the nerve axon so that it is unable to support the metabolic process of its distal part resulting in degeneration of the whole length of the new fiber including the myelin sheath distal to the lesion. This process is called **Wallerian degeneration**. It takes as long as 14 days to degenerate. The distal section of nerve remains excitable and can conduct impulse before degeneration has taken place.
5. **Define laser and its type:** The word LASER is an acronym for Light Amplification of Stimulated Emission of Radiation. The various types of laser are: Ruby laser (or crystal laser), Helium-neon laser (gas laser), Diode laser (or semiconductor laser).
6. **Beat frequency:** Beat frequency is produced as a result of interference of two currents. In Interferential therapy is the application of two medium frequency currents to produce a low frequency effect. It is based on the principle of Interference, as a result of which a beat frequency is produced. For example, let us take two medium frequency currents, current in circuit A = 4000 Hz and circuit B = 3900 Hz. Where these two currents are applied to the tissues, at the point where the currents cross over, a new beat frequency current is set up whose amplitude is modulated and the frequency of new current is called beat frequency (interferential current) and that is 100 Hz.
7. **Heat Loss:** Heat transfer occurs in body by conduction, convection, conversion, radiation, or evaporation. Thermoregulation by the body also uses the aforementioned processes to maintain core body temperature and to maintain equilibrium between internal metabolic heat production and heat loss or gain at the skin surface. To minimize heat loss, insulating mitts should be applied to the hands or feet.
8. **Lenz's law:** This law gives us the direction of current in a circuit. According to this law, the induced current will appear in such a direction that it opposes the change (in magnetic flux) responsible for its production.
9. **Indications of wax:** Paraffin wax therapy is used for the treatment of: Rheumatoid arthritis, Osteoarthritis, Joint stiffness, adhesions, Post immobilization stiffness, scars on the skin, etc.