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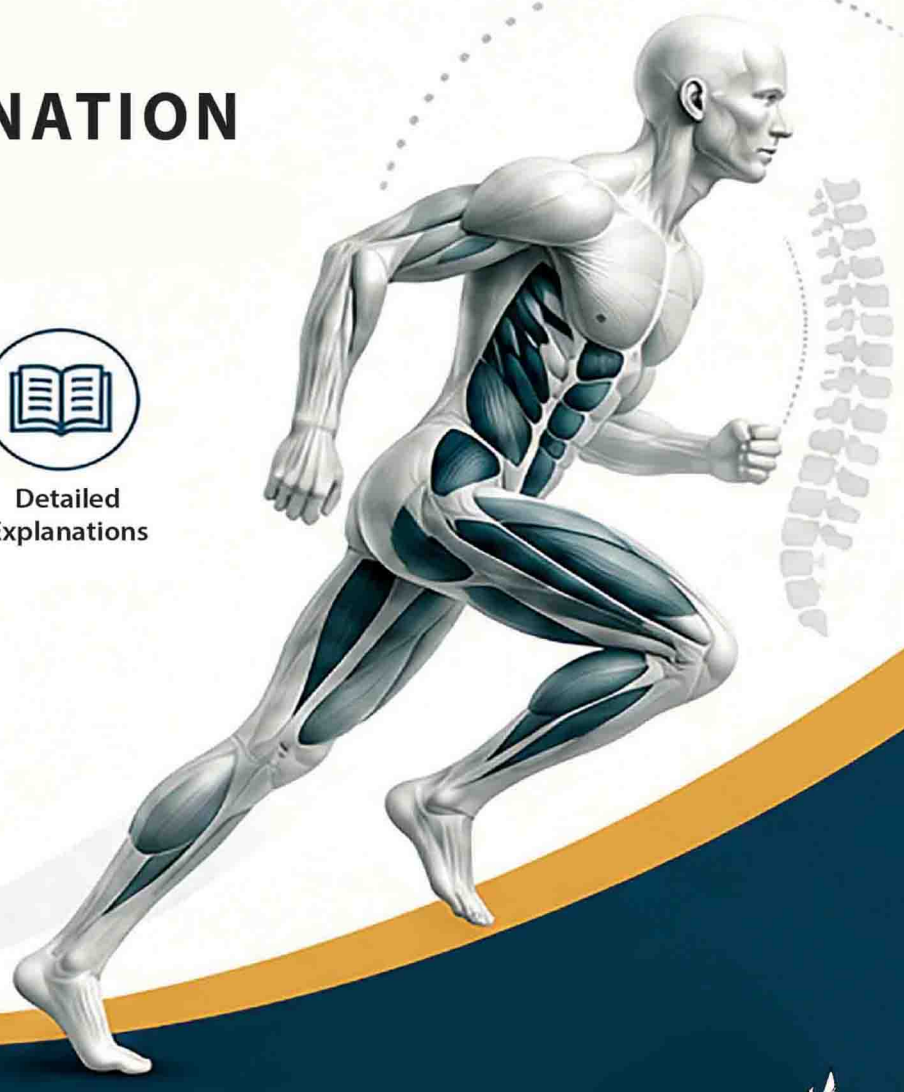
MCQs for MASTERS IN PHYSIOTHERAPY (MPT) ENTRANCE EXAMINATION

4th Edition



Exam-Focused MCQs

High-Yield Questions

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HIGHLIGHTS

- Thoroughly updated 3200+ MCQs
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- 26 comprehensive model question papers included

Suraj Kumar

Foreword
Sunil Kumar

JAYPEE

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AQ: Please provide Answer for questions no 145, 159 and 228

CHAPTER 2

Electrotherapy

Objective Questions with Answers

General Electrotherapy

Q 1. The earth pin of the plug socket is larger as:
[Electrotherapy/Clayton/9th Ed./Pg. 48]
A. It allows one-way entry of the socket
B. It allows the earth pin to enter first and come out last
C. Both A, B
D. None of the above

Q 2. The fuse in a power circuit should break:
[Electrotherapy/Clayton/9th Ed./Pg. 46]
A. The neutral wire
B. The live wire
C. Both live and neutral wire
D. None of the above

Q 3. The switches in the apparatus should break:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 85]
A. The neutral wire
B. The live wire
C. Both live and neutral wire
D. None of the above

Q 4. The wire in a fuse should have:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 85]
A. Very high melting point
B. Very low melting point
C. High thermal tolerance
D. None of the above

Q 5. The earth pin should be connected to:
[Electrotherapy/Clayton/9th Ed./Pg. 48]
A. The wire with black or blue color
B. The wire with yellow or green color
C. The wire with red or brown color
D. None of the above

Q 6. Rectification of a circuit is achieved using:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 51–57]
A. Diode valve
B. Rheostat
C. Transformer
D. Capacitor

Q 7. The device used to regulate current is:
[Electrotherapy/Clayton/9th Ed./Pg. 39]
A. Semiconductor
B. Triode valve
C. Rheostat
D. Capacitor

Q 8. The amount of heat produced during treatment with an electric current increases if:
[Electrotherapy/Clayton/9th Ed./Pg. 117]
A. Skin impedance is high
B. The treatment time is of a short interval
C. The total current is not high
D. None of the above

Q 9. Which of the following is a true sentence?
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 90]
A. After a severe shock there is paralysis of the respiratory muscles
B. Hot drinks should be avoided following a shock
C. After a severe shock there is rise in blood pressure
D. Shocks are more severe with direct currents

Q 10. The device used to regulate current by altering the resistance or the potential of the circuit is:
[Electrotherapy/Clayton/9th Ed./Pg. 39]
A. Condenser
B. Diode
C. Rheostat
D. Semiconductor

Q 11. Thermionic valve is a device that allows electrons to flow in:
[Electrotherapy/Clayton/9th Ed./Pg. 36]
A. Reverse direction
B. Both directions
C. One direction
D. All directions

Q 12. The device that measures electrical resistance is:
[Electrotherapy/Clayton/9th Ed./Pg. 36]
A. Ohmmeter
B. Potentiometer
C. Voltmeter
D. Transformer

Q 13. As the temperature of the conductor increases, the resistance to flow of electron:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 24]
A. Doubles
B. Decreases
C. Remains the same
D. Increases

Q 14. EMF of any cell can be measured by:
[Electrotherapy/Clayton/9th Ed./Pg. 81]
A. Wheatstone bridge
B. Potentiometer
C. Voltmeter
D. Ammeter

Answers	1 C	2 C	3 C	4 B	5 B	6 A	7 C	8 A	9 B	10 C	11 C	12 A
	13 B	14 B										

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Q 15. The instrument used to measure current intensity is:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 73]
A. Wheatstone bridge B. Potentiometer
C. Voltmeter D. Ammeter

Q 16. At the neuromuscular junction the chemical released is:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 111]
A. Calcium B. Prostaglandin
C. Acetylcholine D. Adrenaline

Q 17. The myelinated nerve fibers usually have diameter above:
[Neurology and Neurosurgery/Illustrated/Lindsay/4th Ed./Pg. 428]
A. 2 µm B. 5 µm
C. 7 µm D. 3 µm

Q 18. Wallerian degeneration is completed by:
[Neurology and Neurosurgery/Illustrated/Lindsay/4th Ed./Pg. 428]
A. 20 days B. 14 days
C. 7 days D. 1 month

Q 19. The mean dielectric constant value of body tissue is:
[Electrotherapy/Clayton/9th Ed./Pg. 117]
A. 50 B. 70
C. 80 D. None of the above

Q 20. In a step-up transformer:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 44]
A. The number of turns of wire in primary coil is more than the secondary
B. Number of turns in primary and secondary is same
C. The number of turns of wire in secondary coil is more than primary
D. None of the above

Q 21. Lenz's law deals with:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 70]
A. Inductance of the conductor
B. Rate of change of magnetic field
C. Direction of current flow
D. Direction of the induced EMF

Q 22. Joule's law expresses the relation between:
[Electrotherapy/Clayton/9th Ed./Pg. 14]
A. Current, voltage and time
B. Current, resistance and time
C. Current, Power and resistance
D. Current, EMF and time

Q 23. High inductance can be incorporated into a conducting coil by:
[Electrotherapy/Clayton/9th Ed./Pg. 21]
A. Using many turns of wire
B. Placing the turns closer
C. Winding the coil into a soft iron core
D. All of the above

Q 24. The dielectric constant of which of following is right?
[Electrotherapy/Clayton/9th Ed./Pg. 117]
A. Fatty tissue B. Skin
C. Bones D. Muscles

Q 25. Average pH of water in the therapeutic pool:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 180]
A. pH 3.75 B. pH 5.75
C. pH 7.75 D. pH 9.75

Q 26. Ideal temperature of therapeutic pool is:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 294]
A. 30.5–35.5°C B. 35.5–40.5°C
C. 40.5–45.5°C D. 26.5–30.5°C

Therapeutic Current

Q 27. When two opposite phases are contained in a single pulse, the wave form is termed as:
[Physical Rehabilitation O'Sullivan/4th Ed./Pg. 233]
A. Monophasic B. Biphasic
C. Asymmetric D. Symmetric

Q 28. The resting membrane potential of the skeletal muscle cell is:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 227]
A. – 60 m B. – 70 mV
C. – 90 mV D. None of the above

Q 29. The resting nerve is positive outside due to concentration of:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 227]
A. Sodium and calcium ions B. Potassium ions
C. Sodium ions D. Calcium ions

Q 30. The rate of conduction of impulses through the AA fiber is:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 229]
A. 15 m/s B. 5 m/s
C. 1 m/s D. 2 m/s

Q 31. A current that produces greater muscular hypertrophy with gain in strength is:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 267]
A. Direct current B. Faradic current
C. Russian current D. Diadynamic current

Q 32. The low frequency currents have a frequency of:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 100]
A. 50 Hz B. 100–150 Hz
C. 1–1000 Hz D. None of the above

Q 33. The circuit used to produce faradic type current is:
[Electrotherapy/Clayton/9th Ed./Pg. 56]
A. Multivibrator circuit B. Surge circuit
C. Voltage halving circuit D. Anode circuit

Q 34. The original faradic current was:
[Electrotherapy/Clayton/9th Ed./Pg. 55]
A. An unevenly alternating current
B. A constant direct current
C. An interrupted direct current
D. An evenly alternating current

Q 35. The minimum resistance of skin is around:
[Electrotherapy/Clayton/9th Ed./Pg. 107]
A. 1,000 µ B. 3,200 µ
C. 5,000 µ D. None of the above

Answers	15 D	16 C	17 A	18 B	19 C	20 C	21 D	22 B	23 D	24 D	25 C	26 B
	27 B	28 C	29 A	30 A	31 C	32 C	33 A	34 A	35 B			

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Q 36. When direct current is passed through the cathode, it increases the excitability of the nerve. This is termed as:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 29]
A. Anelectronus
B. Catelectronus
C. Depolarization
D. Repolarization

Q 37. The state of decreased excitability of a nerve near the anode is termed as:
[Physical Agent in Rehabilitation/Cameron/5th Ed./Pg. 228]
A. Anelectronus
B. Catelectronus
C. Depolarization
D. Repolarization

Q 38. The smallest current that produces a muscle contraction when the stimulus is of infinite duration is:
[Electrotherapy/Clayton/9th Ed./Pg. 95]
A. Chronaxie
B. Rheobase
C. Microcurrent
D. Pulse duration

Q 39. The shape of the curve in strength duration curve indicates:
[Electrotherapy/Clayton/9th Ed./Pg. 92]
A. The site of lesion
B. Onset
C. Proportion of denervation
D. All of above

Q 40. The types of muscle fibers mostly activated by electrical stimulation are:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 231]
A. Type-I fibers
B. Type-II a, fibers
C. Type-II b, fibers
D. None of the above

Q 41. The resting nerve is:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 227]
A. Negative inside and positive outside
B. Negative outside and positive inside
C. Positive inside and positive outside
D. Negative inside and negative outside

Q 42. When a healthy innervated muscle is stimulated with an electrical current, we stimulate the:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 61]
A. The neurolemma of the axon
B. The sarcolemma of the muscle
C. The neuromuscular junction
D. All of the above

Q 43. The resting membrane potential of a nerve cell is:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 60]
A. – 70 mV
B. – 50 mV
C. – 120 mV
D. 1 mV

Q 44. Selective impulses are used for stimulation of:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 83]
A. Innervated muscles
B. Denervated muscles
C. Muscle strengthening
D. None of the above

Q 45. Conventional TENS is:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 189]
A. High intensity, low frequency stimulation
B. Low intensity, low frequency stimulation
C. High intensity, high frequency stimulation
D. High frequency, low intensity stimulation

Q 46. Which one of the following has an anesthetic effect?
[Electrotherapy Explained/Low and Reed/3rd Ed./Pg. 36]
A. High voltage pulsed current
B. Continuous galvanic current
C. Diadynamic current
D. Russian currents

Q 47. The constant current stimulator is:
[Physical Agent in Rehabilitation/Cameron/5th Ed./Pg. 271]
A. More accurate
B. More comfortable
C. Accurate as well as comfortable
D. None of the above

Q 48. Which of the statement is a false?
[Electrotherapy Explained/Low and Reed/3rd Ed./Pg. 62]
A. Edema due to disruption of blood vessels is alleviated with HVPC
B. Polarity is the predominant current characteristic to be considered in wound healing
C. HVPC can be used for muscle re-education
D. HVPC has a single monophasic wave form

Q 49. To stretch adherent scar, the ion selected for iontophoresis is:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 169]
A. Magnesium
B. Copper
C. Chloride
D. Zinc

Q 50. Which of the ions delivered through iontophoresis can be used in the treatment of calcific deposits?
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 166]
A. Zinc
B. Hyaluronidase
C. Chloride
D. Acetate

Q 51. The quantity of ions introduced across the body surface by iontophoresis is directly proportional to:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 171]
A. Current intensity
B. Current density
C. Duration of current
D. Concentration of ions in solution

Q 52. Which of the following statements regarding diadynamic current is false?
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 105]
A. It is sine wave at a frequency of 100 Hz
B. It is either full wave or half wave rectified
C. It is a biphasic pulsed current
D. It is a unidirectional current flow with long pulse duration

Q 53. The term Russian current applies to stimulators:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 266]
A. Which produces an asymmetric monophasic pulse from
B. Which have a ramp-up and ramp down mode
C. Which modulate a continuous sine wave
D. Which produces sine waves with full wave rectification

Answers	36 B	37 A	38 B	39 C	40 B	41 A	42 A	43 A	44 B	45 D	46 B	47 A
	48 D	49 C	50 D	51 B	52 C	53 C						

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Q 54. Which of the following statements regarding effects of direct current is false?
[Electrotherapy Explained/Low and Reed/3rd Ed./Pg. 41]
A. It causes excitation of peripheral nerves
B. It cause alteration in protein synthesis
C. It causes smooth muscle contraction
D. It causes change in thermal and chemical balance of tissues

Q 55. In monopolar technique the dispersive electrode:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 3926]
A. Minimizes current density
B. Maximizes current density
C. Increases the resistance
D. Increases the intensity

Q 56. A complete interference pattern is a feature of:
[Electrotherapy/Clayton/9th Ed./Pg. 98]
A. Normal muscle in volition
B. Denervated muscle
C. Partially innervated muscle
D. None of the above

Q 57. The reaction seen under the cathode when a direct current is passed through it is:
[Electrotherapy/Clayton/9th Ed./Pg. 36]
A. Acidic reaction
B. Neutral reaction
C. Alkaline reaction
D. No reaction

Q 58. The medium frequency currents have a frequency of:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 106]
A. 1–1000 Hz
B. Above 10,000 Hz
C. Above 1000 Hz and below 10,000 Hz
D. None of the above

Q 59. Which of the following statements regarding interferential current therapy is true?
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 258]
A. Bipolar method does not provide endogenous interferential current
B. In quadripolar technique the current at the electrode skin interference is modulated
C. In quadripolar approach the stimulus is stronger on the skin
D. Bipolar method is difficult and time consuming

Q 60. In cases of diffuse area of pathology, the IFT mode selected is:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 259]
A. Scanning mode
B. Frequency sweep mode
C. Quadripolar mode
D. None of the above

Q 61. In order to produce muscle contraction the frequency of interferential current selected is:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 257]
A. 1–10 Hz
B. 1–100 Hz
C. 80–150 Hz
D. None of the above

Q 62. High frequency currents have a frequency of:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 108]
A. Above 10,000 Hz
B. Below 10,000 Hz
C. 500 Hz
D. None of the above

Q 63. The modality of choice for the treatment of postnatal perineal pain would be:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 46]
A. Ultraviolet radiation
B. Microwave diathermy
C. Pulsed electromagnetic energy
D. None of the above

Q 64. The unknown resistance of a circuit can be known by:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 69]
A. Potentiometer
B. Wheatstone bridge
C. Ammeter
D. None

Q 65. A patient sustains a deep laceration on the right anterior thigh after stumbling and falling in a modality cart. The therapist's most immediate response should be to:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 32]
A. Apply direct pressure over the wound
B. Apply heat
C. Apply ice
D. Fill out an incident report

Q 66. Thermal conductivity of which of the following is least?
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 35]
A. Muscle
B. Skin
C. Ligaments
D. Fat

Q 67. Cold reduces pain as it is:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 40]
A. Reduce transmission of neural impulses
B. Act as counter irritant
C. Releases opioids
D. All of the above

Q 68. PUVA therapy is not used for:
[Electrotherapy/Clayton/9th Ed./Pg. 189]
A. Alopecia
B. Pressure sores
C. Plantar warts
D. All of the above

Q 69. TENS is a:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 103]
A. Low frequency type of current
B. Microcurrent
C. High frequency type of current
D. Medium frequency type of current

Q 70. The dielectric constant of tissues with high water content:
[Physical Agents in Rehabilitation/Cameron/5th Ed./Pg. 238]
A. is less than the fatty tissue
B. is less than the skin
C. is less than the bony tissue
D. is more than the tissue with low water content

Q 71. The dielectric constant of water is:
[Physical Agents in Rehabilitation/Cameron/5th Ed./Pg. 219]
A. 0.81
B. 81.1
C. 18.1
D. 1.08

Answers	54 C	55 A	56 A	57 C	58 C	59 B	60 A	61 B	62 A	63 C	64 B	65 A
	66 D	67 B	68 B	69 A	70 D	71 B						

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Q 72. Most useful modality for rehabilitation in cervical spine injury with quadriplegia is:
[Physical Agents in Rehabilitation/Cameron/5th Ed./Pg. 377]
A. CPM upper limb
B. CPM lower limb
C. Tilt table
D. Wax bath

Q 73. A capacitor is a device for:
[Electrotherapy/Clayton/9th Ed./Pg. 32]
A. Storing an electrical charge
B. Stepping up voltage
C. Producing magnetic field
D. None of the above

Q 74. Contraindications for hydrotherapy pool treatment is:
[Cameron, Saunder/2nd Ed./Pg. 294]
A. Bowel incontinence
B. Fits and seizures
C. Open wounds
D. All of the above

Q 75. Which of the following situations would be contraindicated when using transcutaneous electrical nerve stimulation?
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 196–197]
A. Use over an arthritic joint
B. Use during labor and delivery
C. Use over a pregnant uterus
D. Use to diminish phantom limb sensation

Q 76. A therapist applies an electrical stimulation unit to a patient rehabilitating from an Achilles tendon rupture. Which of the following types of current has the lowest total average current?
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 200–201]
A. Low volt
B. High volt
C. Russian
D. Interferential

Q 77. A therapist explains to a patient the benefits of using electrical stimulation for muscle reduction. The patient appears to understand the therapist's explanation, however seems extremely fright and asks the therapist not to use electrical device. The most appropriate therapist action is:
[Electrotherapy/Clayton/9th Ed./Pg. 68]
A. Reassure the patient that the electrical stimulation will not be harmful
B. Use only small amounts of current
C. Select another appropriate treatment technique
D. Discharge the patient from physical therapy

Q 78. A physical therapist treats a patient using transcutaneous electrical nerve stimulation. Which condition would not be considered a contraindication for TENS?
[Electrotherapy Simplified/Nanda 1st Ed./Pg. 198]
A. Placement over the carotid sinus
B. Placement over a pregnant uterus
C. Use on a patient with a cardiac pacemaker
D. Use during labor and delivery

Heating Modalities

Q 79. Energy required to change the state of a substance is:
[Electrotherapy/Clayton/9th Ed./Pg. 5]
A. Kinetic energy
B. Potential energy
C. Latent heat
D. Chemical energy

Q 80. The property of a device that enables it to store electrical energy by means of an electromagnetic field:
[Electrotherapy/Clayton/9th Ed./Pg. 18]
A. Conductance
B. Capacitance
C. Inductance
D. Impedance

Q 81. A choke coil is used in a circuit:
[Electrotherapy/Clayton/9th Ed./Pg. 242]
A. To supply uniform current flow
B. To allow the flow of low frequency, and prevent the flow of high frequency currents
C. Both A and B
D. None of the above

Q 82. Transmission of heat due to convection primarily takes place in:
[Electrotherapy/Clayton/9th Ed./Pg. 6]
A. Solids
B. Fluids
C. Metals
D. Atoms

Q 83. The law that tells about the direct relationship of the metabolic rate to increase in tissue temperature is:
[Electrotherapy/Clayton/19th Ed./Pg. 6]
A. Joule's law
B. Van't Hoff's law
C. Grotthus low
D. Eddy's law

Q 84. Skin resistance can be decreased by:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 24]
A. Warming
B. Cooling
C. Drying
D. Use of law voltage current

Q 85. The statement that is true for inductothermy is:
[Electrotherapy Clayton/9th Ed./Pg. 130]
A. It effects more of tissues with high impedance
B. It produce greater tissue temperature than capacitor field method
C. It is applied by the disc electrodes
D. None of the above

Q 86. In tissue heating by SWD, complex permittivity is dependent upon:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 322]
A. Frequency
B. Intensity
C. Duration of application
D. None of the above

Q 87. A magnaplode stands for:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 343]
A. Flat helix
B. Drum electrode
C. Pad electrode
D. Disc electrode

Q 88. For thermal effect to be produced by PSWD, the mean power exceeds:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 364]
A. 3 W
B. 5 W
C. 10 W
D. None of the above

Q 89. Strong superficial heating relieves pain by:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 274]
A. Counter irritation
B. Increased blood supply
C. Muscle relaxation
D. Increased metabolic rate

Answers	72 C	73 A	74 D	75 C	76 D	77 C	78 D	79 C	80 B	81 C	82 B	83 B
	84 A	85 B	86 A	87 A	88 B	89 A						

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Q 90. The term decimeter wave applies:
[Electrotherapy/Clayton/9th Ed./Pg. 157]
A. Infrared
B. Shortwave
C. Microwaves
D. None of the above

Q 91. The term diathermy means:
[Physical Agent in Rehabilitation Cameron/2nd Ed./Pg. 388]
A. Superficial heating
B. Deep heating
C. Through and through heating
D. None of the above

Q 92. The cable method in SWD is called:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 342]
A. Pulsed SWD
B. Cross fire method
C. Inductothermy
D. Contraplanar method

Q 93. The position of SWD electrodes when treating a structure of high impedance should be such that:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 336]
A. The tissue remain at right angles to the electric field
B. The tissues remain parallel to the electric field
C. One electrode nearer to the skin than other
D. Both the electrodes nearer the skin

Both the Electrodes Nearer the Skin

Q 94. Which of the following fields predominate when SWD is applied by the cable method to a material of high impedance?
[Electrotherapy/Clayton/9th Ed./Pg. 130–131]
A. Electromagnetic field
B. Electric field
C. Magnetic field
D. None of the above

Q 95. The commonly used therapeutic frequency of SWD is:
[Electrotherapy/Clayton/9th Ed./Pg. 114]
A. 29.17 MHz B. 27.12 MHz
C. 30.12 MHz D. 20.19 MHz

Q 96. Whenever deeply placed structures are to be treated with the capacitor field method, which of the following technique would be used?
[Electrotherapy/Clayton/9th Ed./Pg. 126]
A. Coplanar B. Crossfire
C. Contraplanar D. Cable

Q 97. While applying SWD by the inductive method to treat structures of high impedance the part of the cable used by:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 134]
A. Middle of the cable
B. The spiral coil
C. Both ends and middle of the cable
D. Ends of the cable

Q 98. What would be ideal during positioning of the SWD electrodes relative to the tissue?
[Electrotherapy/Clayton/9th/Pg. 124]
A. Placing at an angle to each other
B. Placing parallel to each other
C. Placing parallel to the skin
D. None of the above

Q 99. The electrode spacing material used in SWD should be:
[Electrotherapy/Clayton/9th Ed./Pg. 121]
A. Of high dielectric constant
B. Of low dielectric constant
C. A good conductor
D. None of the above

Q 100. For a given treatment area what should be the appropriate size of the SWD electrodes?
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 1331]
A. Smaller than of the part to be treated
B. Little larger than the part to be treated
C. One electrode larger than the other
D. Equal to the area to be treated

Q 101. The amount of heat delivered to the body by moist hot pack is more than PWB, because:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 221]
A. The specific heat of water is more than wax
B. The specific heat of wax is more than convection
C. Moist heat produces heat in body by convection
D. None of the above

Q 102. The number of layers of towel between the moist pack and skin should have at least:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 285]
A. 4 layers B. 16 layers
C. 8 layers D. 6 layers

Q 103. The proportion of solid wax to mineral oil in Paraffin wax treatments should be:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 276]
A. 7:1 B. 5:1
C. 4:1 D. None of the above

Q 104. In Paraffin wax treatments there should be at least:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 278]
A. 203 mm, thickness of wax on the part
B. 5 mm, thickness of wax on the part
C. 6 mm, thickness of wax on the part
D. 9 mm, thickness of wax on the part

Q 105. Which one of the following regarding dry and moist heat treatment is true?
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 168/174]
A. Dry heat causes strong superficial heating whereas moist heat causes deep heating
B. Moist heat causes strong superficial heating whereas dry heat causes deep heating
C. Both cause strong deep heating
D. None of the above

Answers	90 C	91 C	92 C	93 A	94 B	95 B	96 C	97 D	98 C	99 B	100 B	101 A
	102 D	103 A	104 A	105 A								

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Q 106. The temperature of fluidotherapy unit should be:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 173]
A. Above 45°C
B. Between 38–45°C
C. Below 38°C
D. None of the above

Q 107. Therapeutically eddy current is used to:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 42]
A. Produce heat
B. Produce nerve stimulation
C. Apply drugs in iontophoresis
D. None of the above

Q 108. Fluidotherapy refers to:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 173]
A. Dry heat modality
B. Fluid immersion therapy
C. Application of analgesic fluid
D. Application of radiation through fluid

Q 109. The contraplanar, capacitor field method of shortwave diathermy is used for treatment of:
[Electrotherapy Clayton/9th Ed./Pg. 126]
A. Superficial lesions of the skin
B. Subcutaneous injuries
C. Deeply placed structures
D. Superficial muscles of spine

Q 110. When different sized electrodes are used for application of SWD by coplanar method:
[Electrotherapy Simplified/Clayton/9th Ed./Pg. 121]
A. The heating effect will not be there
B. Very deep effect will be achieved
C. Concentration of heat will be achieved
D. Superficial heating under the small electrodes will occur

Q 111. In contrast bath he period of immersion in hot and cold bath is as:
[Physical Agent in Rehabilitation/Cameron/Pg. 291]
A. Hot water – 30 seconds, cold water – 10 seconds
B. Hot water – 10 seconds, cold water – 30 seconds
C. Hot water – 3–4 minutes, cold water – 1 minute
D. Hot water – 1 minutes, cold water – 3–4 minutes

Q 112. The choice of modality to treat painful joints of hand of a rheumatoid arthritic patient is:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 1280]
A. Hot packs
B. Infrared rays
C. Microwave diathermy
D. Paraffin wax bath

Q 113. The thermal conductivity in which of the following tissues is higher?
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 135]
A. Muscles
B. Skin
C. Ligaments
D. Fat

Q 114. Heliotherapy is treatment by:
[Electrotherapy Simplified/Nanda/Heliotherapy 1st Ed.]
A. Natural sunlight
B. Russian current
C. Didynamic current
D. Mud packs

Q 115. A 55-year-old female diagnosed with a right hip intertrochanteric fracture is eight weeks status post-open reduction and internal fixation with a plate and pinning. The patient has pain with active hip flexion and abduction. Acceptable modalities for this patient would include all of the following except:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 394]
A. Hot packs
B. Whirlpool
C. Pulsed ultrasound
D. Shortwave diathermy

Q 116. A therapist examines a morbidly obese patient in physical therapy. The therapist would like to incorporate modalities into the patient's care plan, but is concerned about excessively elevating the patient's tissue temperature. Which modality would potentially be the most hazardous?
[Physical Agent in Rehabilitation/Caneroon/2nd Ed./Pg. 395–397]
A. Diathermy
B. Hot packs
C. Paraffin
D. Pulsed ultrasound

Q 117. An 18-year-old male six weeks status post-open reduction of a Colle's fracture is referred to physical therapy. Examination reveals mild swelling on the dorsum of the hand and limited flexion of the metacarpophalangeal joints in all digits. The most appropriate heating agent for the patent is:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 281]
A. Paraffin
B. Hot packs
C. Vapocoolant sprays
D. Ultrasound

Q 118. A patient rehabilitating from a lower extremity injury is referred to physical therapy for hydrotherapy treatments. The therapist would like the patient to fully extend the involved lower extremity while in the hydrotherapy tank. Which type of whirlpool would not allow the patient to extend the involved lower extremity?
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 286, 289]
A. Hubbard tank
B. Highboy tank
C. Lowboy tank
D. Walk tank

Q 119. Whirlpool treatments are commonly used in physical therapy to stimulate circulation promote muscle relaxation, and provide pain relief. Which statement regarding hydro-therapy is not true?
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 287]
A. 41–46°C is an acceptable range for water temperature
B. The region to be treated should be thoroughly inspected prior to beginning treatment
C. The tank and turbine should be cleaned after each treatment
D. The agitation force should be adjusted initially at a minimum level and increased as desired

Q 120. All of the following are used frequently by a physical therapist to treat temporomandibular joint disorders except:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 363]
A. Postural training
B. Diathermy
C. Electrical stimulation
D. Ultrasound

Answers	106 B	107 A	108 A	109 C	110 C	111 C	112 D	113 A	114 A	115 D	116 A	117 A
	118 B	119 A	120 B									

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Q 121. A patient ambulates outside rehabilitation hospital as part of a therapy session. The therapist monitors the patient closely during the session due to extreme heat and humidity. What is the primary mode of beat loss during exercise?

[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 137]

A. Conduction
B. Convection
C. Evaporation
D. Radiation

Q 122. An example of a heating agent which can cause temperature elevation in tissues to depths of three centimeters or more includes:

[Electrotherapy Simplified/Nanda/1st Ed./Pg. 391–392]

A. Paraffin
B. Moist heating packs
C. Whirlpool
D. Ultrasound

Q 123. Shortwave diathermy is used for all of the following except:

[Electrotherapy Simplified/Nanda/1st Ed./Pg. 328]

A. Back pain
B. Hemophiliac joint
C. Osteoarthritis
D. Sprain

Ultrasound

Q 124. Which one of the following is true regarding production of ultrasound?

[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 193]

A. Ultrasound is produced by electromagnetic induction
B. Ultrasound is produced by piezoelectric effect
C. Ultrasound is produced by reverse piezoelectric effect
D. None of the above

Q 125. The depth of near field of an ultrasonic beam can be calculated by:

[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 140]

A. $1/r^2$
B. $2/r^2$
C. $r^2/l\,c$
D. r^2

Q 126. The half value depth of 1 MHz ultrasound is:

[Electrotherapy Simplified/Nanda/1st Ed./Pg. 388]

A. 1 cm
B. 3 cm
C. 5.6 cm
D. 6.5 cm

Q 127. The following statements regarding coupling medium used with ultrasound are true except:

[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 207]

A. Transmission of ultrasound by aquasonic gel is 40%
B. A gel is an ideal coupling medium
C. It helps in the transmission of ultrasound
D. To eliminate air between transducer head and the patient

Q 128. As an ultrasonic beam travels through tissues, the energy contained with in it decreases with the distance traversed. This phenomenon is known as:

[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 191]

A. Absorption
B. Attenuation
C. Conduction
D. Reflection

Q 129. When an ultrasonic beam travels in a medium in which its velocity is law into one in which its velocity is high, it is?

[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 191]

A. Reflected
B. Refracted away from the normal
C. Refracted towards the normal
D. Not transmitted

Q 130. The vibrating source required to produce ultrasound is achieved using:

[Electrotherapy Simplified/Nanda/1st Ed./Pg. 377]
[Clayton/9th Ed./Pg. 165]

A. Sodium citrate
B. Barium titanate
C. Silver nitrate
D. Chromium oxide

Q 131. The percentage of transmission of a aquasonic gel is:

[Electrotherapy Clayton/9th Ed./Pg. 171]

A. 59%
B. 19%
C. 67%
D. 72%

Q 132. A patient with a cardiac pacemaker suffers from shoulder pain and stiffness. Which of the following modality would be indicated?

[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 423]

A. TENS
B. IFT
C. Ultrasound
D. None of the above

Q 133. The ratio of spatial peak intensity to spatial average intensity is:

[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 188]

A. Far field
B. Near field
C. Effective radiation area
D. Beam nonuniformity ratio

Q 134. A duty cycle of 20° is equivalent to a m:s ratio of

[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 185]

A. 1:7
B. 1:4
C. 1:8
D. 2:5

Q 135. When an ultrasonic beam is applied to a cell membrane, it causes unidirectional flow of tissue components. This is termed as:

[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 191]

A. Cavitation
B. Attenuation
C. Adsorption
D. Acoustic streaming

Q 136. The resistance to passage of sound is called as:

[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 192]

A. Cavitation
B. Attenuation
C. Phonation
D. Acoustic impedance

Q 137. The unit of ultrasound is:

[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 208]

A. Watts
B. Watts/cm^2
C. Volts/sqinch
D. Newton

Q 138. The frequency of therapeutic ultrasound is:

[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 186]

A. 1–3 MHz
B. 0.75–3.3 MHz
C. 0.5–1 MHz
D. None of the above

Answers	121 C	122 D	123 B	124 C	125 C	126 D	127 A	128 B	129 B	130 B	131 D	132 C
	133 D	134 B	135 D	136 D	137 B	138 A						

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Q 139. The amount of US reflected at the bone periosteum interface is:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 380]
A. 30% B. 20%
C. 70% D. 100%

Q 140. The absorption coefficient of muscle for ultrasound absorption is:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 383]
A. Double of fat B. Same as fat
C. Half of fat D. None of the above

Q 141. Phonophoresis occurs due to:
[Physical Agent in Rehabilitation Cameron/2nd Ed./Pg. 193]
A. Acoustic streaming B. Unstable cavitation
C. Attenuation D. Reflection

Q 142. The frequency of infrasonic waves lie between:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 1375]
A. Below 20 Hz B. 1–5 KHz
C. 10–20 KHz D. 1–3 MHz

Q 143. The cavitation effect of ultrasound application to body is:
[Physical Agent in Rehabilitation/Cameron/2nd. Ed./ Pg. 192 and Clayton/9th Ed./Pg. 173]
A. Micromassage B. Rise in local temperature
C. Analgesic effect on nerves D. Gas bubbles in tissues

Q 144. To treat open wounds by ultrasonic the following gel is used as couplant medium:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 198]
A. Cobadex cream B. Geliperm sterile pack
C. Emla gel D. Xylocaine ointment

Q 145. For theraml effect of ultrasound, which intensity is required when1MHz frequency ultrasound is used?
[Physical Agents in Rehabilitation/ Michelle H. Cameron/5th Ed/Pg. 185]
A. Less than 1 W/cm^2 B. 1.5–2.0 W/cm^2
C. 2–3 W/cm^2 D. More than 2 W/cm^2

Q 146. Ultrasound may be safely employed over:
[Electrotherapy Clayton/9th Ed./Pg. 176]
A. Tumor B. Growing epiphysis
C. Abdomen in pregnancy D. Metal implants

Q 147. Using the water bag technique for application of ultrasonic therapy:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 414]
A. Couplant is not used
B. Couplant is contained inside the water bag
C. Couplant is applied over the upper surface of the bag on which transducer head is used
D. Couplant is applied on both the sides of water bag

Q 148. Treatment of choice for supraspinatus tendinitis is which of the following?
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 403]
A. Short wave diathermy B. Ultrasonic therapy
C. LASER D. CPM

Q 149. In acute fracture what type of ultrasound should be used?
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 200]
A. Low intensity pulsed B. High intensity continous
C. Low intensity continuous D. High intensity pulsed

High Intensity Pulsed

Q 150. A physical therapist elects to use ultrasound on a patient diagnosed with a second degree lateral ankle sprain. The therapist uses the underwater technique due to the uneven joint surface and the patient's extreme sensitivity to pressure. Which description of ultrasound using the underwater techniques is true?
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 198]
A. The transducer should be place directly on the skin
B. A commercial gel is appropriate for a coupling medium
C. The transducer should be held one-half to one inch from the skin and moved throughout the entire section
D. The patient should move the transducer once it is immersed in the water

Q 151. Which therapeutic modality would be a relative contraindication in a pediatric patient with juvenile rheumatoid arthritis?
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 415–442]
A. Superficial heat
B. Ultrasound
C. Transcutaneous electrical nerve stimulation
D. Ice

Q 152. A 28-year-old male referred to physical therapy by his primary physician complains of recurrent ankle pain. As part of the treatment program the therapist uses ultrasound ever the peroneus longus and brevis tendons. The most appropriate location for ultrasound applications is:
[Physical Agents in Rehabilitation/ Michelle H. Cameron/5th Ed./Pg. 178]
A. Inferior to the sustentaculum tali
B. Over the sinus tarsi
C. Posterior to the lateral malleolus
D. Anterior to the lateral malleolus

Q 153. Iontophoresis and phonophoresis are commonly used to deliver a specified medication through the skin to underlying tissues. Which route of administration does iontophoresis and phonophoresis utilize?
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 417]
A. Inhalation B. Sublingual
C. Topical D. Transdermal

Q 154. A therapist prepares to treat a patient with continuous ultrasound. Which general rule best determines the length of treatment when using ultrasound?
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 407]
A. 2 minutes for every area that is 2–3 times the size of the transducer face
B. 5 minutes for every area that is 2–3 time the size of the transducer face
C. 5 minutes is the maximum treatment time regardless of the treatment area
D. 10 minutes is the maximum treatment time regardless of the treatment area

Answers	139 C	140 A	141 A	142 A	143 A	144 B	145 B	146 D	147 C	148 B	149 A	150 C
	151 B	152 C	153 D	154 B								

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Q 155. All of the following modalities would be indicated in the treatment of a pregnant woman except:

[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 206]

A. Vapocoolant sprays in the treatment of muscle spasms
B. Transcutaneous electrical nerve stimulation used for pain relief during labor
C. Phonophoresis in the treatment of lateral epicondylitis
D. Continuous ultrasound over an area of diminished circulation

Q 156. A therapist observes random changes in the intensity of an ultrasound generator during patient treatment. The most appropriate response is to:

[Electrotherapy Clayton/9th Ed./Pg. 165–176]

A. Ignore the changes in the intensity since they are normal when using ultrasound
B. Continue to use the machine at intensity levels less than 1.0 w/cm^2
C. Closely monitor the machine during use
D. Discontinue use the machine and contract a service technician

Q 157. Tissues of high collagen content are affected to a greater extent by ultrasound energy. Which tissue would you expect to absorb the most ultrasound energy?

[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 191]

A. Bone
B. Muscle
C. Tendon
D. Skin

Q 158. Biophysical effects of ultrasound include thermal and nonthermal effects. The amount of heat absorbed using ultrasound is least dependent upon:

[Electrotherapy Simplified/Nanda/1st Ed./Pg. 409]

A. The intensity
B. The duration of exposure
C. The choice of coupling agent
D. The size of the area sonated

Q 159. A recreational tennis player is diagnosed with lateral epicondylitis. All of the following are considered appropriate forms of treatment for acute lateral epicondylitis except:

[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 195]

A. Modification of tennis grip and string tension
B. Phonophoresis
C. Curvilinear brace applied just below the bend in the elbow
D. Progressive resistive emphasizing the wrist extensors

Q 160. A therapist uses ultrasound to elevate the tissue temperature at the insertion of the supra of the supraspinatus. What would be the most appropriate patient for the ultrasound application?

[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 199–200]

A. Patient in supine with the arm abducted and externally rotated
B. Patient in supine with the arm adducted and medially rotated
C. Patient in supine with the arm abducted and medially rotated
D. Patient in supine with the arm adducted and externally rotated

Q 161. A patient with degenerative joint disease is referred to physical therapy with right shoulder pain. During the initial examination the therapist identifies significant muscle guarding and spasm throughout the right shoulder. If the therapist elects to treat the patient using ultrasound, which patient position would be the most appropriate?

[Electrotherapy Simplified/Nanda/1st Ed./Pg. 412]

A. Supine with the upper extremity slightly flexed and adducted
B. Supine with the arm resting against the abdomen
C. Supine with the glenohumeral joint in the resting position
D. A position where the patient is comfortable and relaxed

Infrared and UVR

Q 162. The angle of incidence for the electromagnetic rays to have maximum absorption should be:

[Electrotherapy Clayton/9th Ed./Pg. 194]

A. 0°
B. 90°
C. 180°
D. None of the above

Q 163. The most susceptible peripheral nerve fibers to be affected by cold application are:

[Electrotherapy Clayton/19th Ed./Pg. 201]

A. B
B. C
C. A^{TM}
D. D

Q 164. In the electromagnetic spectrum infrared occupy a place between:

[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 372]

A. 400–750 nm
B. 10–400 nm
C. 200–350 nm
D. 750–400,000 nm

Q 165. The depth of penetration of luminous infrared is:

[Electrotherapy/Clayton/9th Ed. Ed./Pg. 36]

A. 15 mm
B. 3 cm
C. 2 mm
D. 5–10 mm

Q 166. Which one statement regarding infrared generators are true?

[Electrotherapy Simplified/Nanda/1st Ed./Pg. 423]

A. The luminous lamp longer for warming up than nonluminous lamp
B. The nonluminous lamp takes longer for warming-up than luminous lamp
C. Nonluminous generators produce visible radiation and IR
D. None of the above

Q 167. Which of the statements for luminous IR is false?

[Electrotherapy Simplified/Nanda/1st Ed./Pg. 423]

A. Luminous IR is considered in acute conditions
B. Luminous IR penetrates deeper than nonluminous
C. Luminous IR is produced along with visible radiation
D. None of the above

Q 168. The law that states about the absorption of electromagnetic waves in the tissue to have an effect is:

[Electrotherapy Clayton/9th Ed./Pg. 26]

A. Joule's law
B. Grotthus law
C. Snell's law
D. None of the above

Q 169. The latent period for the appearance of a third degree erythema is:

[Electrotherapy Clayton/9th Ed./Pg. 186]

A. 10–12 hours
B. 1–4 hours
C. 8–10 hours
D. None of the above

Answers	155 D	156 D	157 A	158 C	159 D	160 C	161 D	162 B	163 B	164 D	165 D	166 B
	167 A	168 B	169 B									

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Q 170. Treatment of psoriasis with Leeds regimen includes all except:
[Electrotherapy Clayton/9th Ed./Pg. 189]
A. Local application of coal tar
B. Test reaction to UVR in the sensitized condition
C. E2 dose is given to the patient.
D. A Theraktin tunnel or an air cooled lamp can be used

Q 171. Which of the following statements regarding Theraktin tunnel is false?
[Electrotherapy Clayton/9th Ed./Pg. 184]
A. It is an easier way to give general irradiation with UVR
B. It emits only UVB rays
C. A suberythemal dose is given
D. Dosage I progressively increased by 12.5%

Q 172. In UVR lamp the heat produced in the burner changes the quartz to:
[Electrotherapy Clayton/9th Ed./Pg. 182]
A. Silicone B. Boron
C. Tridymite D. Silicon oxide

Q 173. Which of the following would be a choice in order to irradiate a sinus with UVR?
[Electrotherapy Clayton/9th Ed./Pg. 183]
A. Air cooled lamp
B. Theraktin tunnel
C. Kromayer with an applicator
D. Fluorescent tube

Q 174. UVR reacts with oxygen in air to produce:
[Electrotherapy Clayton/9th Ed./Pg. 182]
A. Neon B. Argon
C. Ozone D. Helium

Q 175. Erythema obtained due to application of UVR is due to:
[Electrotherapy Clayton/9th Ed./Pg. 180]
A. Release of chemical substances
B. Arterial dilatation
C. Venous dilation
D. Damage to RBC

Q 176. The wavelength of UVA is:
[Electrotherapy Clayton/9th Ed./Pg. 180]
A. 280–315 nm
B. 260–280 nm
C. 315–400 nm
D. 220–260 nm

Q 177. Which of the following statement regarding UVR is false?
[Electrotherapy Clayton/9th Ed./Pg. 188]
A. Carcinogenesis is a danger due to long exposure to UVR
B. Short UVR can be used for sterilization
C. UVB damages granulation tissue
D. Minimal erythemal dose is given for treatment of acne

Q 178. In the quartz applicator, ultraviolet is transmitted by:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 459]
A. Refraction B. Total internal reflection
C. Diffusion D. None of the above

Q 179. The epidermal transit time is:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 465]
A. 14 days B. 5 days
C. 28–70 days D. None of the above

Q 180. For the treatment of psoriasis:
[Electrotherapy Clayton/9th Ed./Pg. 189]
A. E1 dose is used
B. Suberythemal dose is used
C. Suberythemal or E1 dose is used
D. None of the above

Q 181. The life of fluorescent tubes are limited to:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 460]
A. 1,000 hours B. 500 hours
C. <500 hours D. None of the above

Q 182. The phosphor coating in fluorescent tubes:
[Electrotherapy Clayton/9th Ed./Pg. 184]
A. Absorbs the long ultraviolet rays
B. Allows both short and long ultraviolet rays to pass
C. Allows short ultraviolet to pass
D. Allows long ultraviolet rays to pass

Q 183. The length of fluorescent tube is:
[Electrotherapy Clayton/9th Ed./Pg. 120]
A. 20 cm B. 50 cm
C. 100 cm D. 120 cm

Q 184. In PUVA treatments, application of UVR is done:
[Electrotherapy Clayton/9th Ed./Pg. 196]
A. 2 hours before ingestion of psoralen
B. 2 hours after ingestion of psoralen
C. After application of coal tar
D. None of the above

Q 185. UVA can penetrate up to:
[Electrotherapy Clayton/9th Ed./Pg. 85]
A. Superficial epidermis B. Superficial fascia
C. Deep epidermis D. Capillary layers of dermis

Q 186. Due to thickening of epidermis, an E3 dose should increase by:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 476]
A. 75% B. 50%
C. 25% D. None of the above

Q 187. In psoriasis, the epidermal transit time is reduced to:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 467]
A. 7 days B. 5 days
C. 28 days D. None of the above

Q 188. After taking the photoactive drug, the patient should take eye protection measures for:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 147]
A. 2 hours B. 6 hours
C. 12 hours D. None of the above

Q 189. The unit of UVR intensity is:
[Electrotherapy Clayton/9th Ed./Pg. 196]
A. J/cm^2 B. Watt
C. mW/cm^2 D. None of the above

Answers	170 C	171 B	172 C	173 C	174 C	175 A	176 C	177 D	178 B	179 C	180 C	181 A
	182 D	183 D	184 B	185 D	186 A	187 A	188 C	189 C				

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Q 190. For the treatment of open wound, UVR is applied at:
[Clayton/9th Ed./Pg. 190]
A. E4 dose B. E2 dose
C. E1 dose D. E0 dose

Q 191. Which type of UVR is ionizing and germicidal:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 454]
A. UVA B. UVB
C. UVC D. None of the above

Q 192. The type of UVR filtered by the ozone layer is:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 454]
A. UVA B. UVC
C. UVB D. None of the above

Q 193. The term vacuum UV refers to:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 454]
A. UVR with wavelength between 100–200 nm
B. UVR with wavelength between 50 and 100 nm
C. UVR with wavelength of 50 nm
D. None of the above

Q 194. The Alpine sun lamp is positioned at a distance of:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 458]
A. 20 cm B. 100 cm
C. 45–50 cm D. None of the above

Q 195. The depth of penetration of UVC is approximately:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 462]
A. 70–80 μm B. 20–30 μm
C. 40–50 μm D. None of the above

Q 196. Maintenance of erythema due to UVB is because of:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 462]
A. Calcium oxide B. Oxygen
C. Nitric oxide D. None of the above

Q 197. Thickening of skin following UVR is due to:
A. Stimulation of fibroblasts
B. Stimulation of keratinocytes
C. Stimulation of sebaceous glands
D. None of the above

Q 198. The protective thickening of the skin due to UVR is gradually lost in:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 465]
A. 2–3 weeks
B. 4–6 weeks
C. 3–4 weeks
D. None of the above

Q 199. Vitamin D is produced by the effect of:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 465]
A. UVB B. UVA
C. UVC D. None of the above

Q 200. Skin cancer due to UVR is due to:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 465]
A. Thickening of epidermis
B. Production of erythema
C. Immunosuppressive effects
D. None of the above

Q 201. Due to carcinogenesis, short UVR should not be applied for:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 466]
A. More than 3 weeks B. More than 8 weeks
C. More than 4 weeks D. None of the above

Q 202. The filter used for filtering short UVR is:
[Electrotherapy Clayton/9th Ed./Pg. 183]
A. Cellophane or blue uviol B. Litmus paper
C. Wire mesh filter D. None of the above

Q 203. The wavelength of nonluminous infrared rays lies from:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 422]
A. 350–400 nm B. 770–1500 nm
C. 70–110 nm D. 7.7–15 nm

Q 204. PUVA therapy is used for:
[Electrotherapy Clayton/9th Ed./Pg. 184]
A. Alopecia B. Psoriasis
C. Pressure sores D. Plantar warts

Q 205. To counter the effect of an overdose of UVR traditionally:
[Electrotherapy Clayton/9th Ed./Pg. 152]
A. Application of infrared ray is used
B. Application of us therapy is used
C. Cryotherapy is given
D. IFT application given

Q 206. Infected wounds are treated by application of the following dose of UVR:
[Electrotherapy Clayton/9th Ed./Pg. 189–190]
A. Suberythemal dose B. Half of E1 dose
C. E4 dose D. E1 dose

Q 207. According to cosine law for maximal absorption of UVR it must strike the surface at:
[Electrotherapy Clayton/9th Ed./Pg. 27]
A. An acute angle B. Right angle
C. An obtuse angle D. 45° angle

Q 208. A therapist prepares to treat a patient using ultraviolet light by determining the patient's minimal erythemal dose. The most common location for testing is:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 145]
A. On the posterior aspect of the upper arm
B. On the anterior aspect of the forearm
C. On the anterior aspect of the thigh
D. On the area to be treated

Q 209. A therapist revises the results of ultraviolet testing. Which grade of erythemal dose best describe the time required for mold reddening of the skin?
[Electrotherapy Clayton/9th Ed./Pg. 186]
A. Suberythemal dose B. Minimal erythemal dose
C. Second degree erythema D. Third degree erythema

Microwave

Q 210. The frequency of microwaves are:
[Electrotherapy Clayton/2nd Ed./Pg. 372]
A. 300 MHz – 300 GHz B. 10 MHz – 100 MHz
C. 200 MHz D. None of the above

Answers												
	190 A	191 C	192 B	193 A	194 C	195 C	196 C	197 B	198 B	199 A	200 A	201 C
	202 A	203 B	204 B	205 A	206 C	207 B	208 B	209 B	210 A			

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Q 211. Which of following modality has maximum frequency?
[Electrotherapy Clayton/9th Ed./Pg. 159]
A. Ultrasound waves B. MWD waves
C. SWD waves D. Infrared radiation waves

Q 212. Microwaves are more absorbed in tissues with:
[Electrotherapy Clayton/9th Ed./Pg. 159]
A. More fat content B. More water content
C. More osseous in nature D. None of the above

Q 213. The very high frequency of microwaves can be produced by:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 392]
A. Repetitively charging and discharging of condenser
B. Thermionic valve
C. Magnetron
D. Transistor

Q 214. The depth of penetration of microwave diathermy is:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 364]
A. 0.5 cm B. 3.0 cm
C. 1.3 cm D. 9.0 cm

Q 215. Microwave diathermy is contraindicated in all of the following except:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 374]
A. Infections B. Pregnancy
C. Tumorous conditions D. Sprain

Laser

Q 216. The depth of penetration of He-Ne laser is:
[Electrotherapy Clayton/AITBS/9th Ed./Pg. 154]
A. 6 mm B. 2–4 mm
C. 1–2 mm D. None of the above

Q 217. Which one of the statement for laser therapy is true?
[Electrotherapy Clayton/9th Ed./Pg. 154]
A. The penetration depth of IR laser < He-Ne laser
B. The penetration depth of IR laser > He-Ne laser
C. Laser produces heat
D. Laser produces nerve stimulation

Q 218. First generation laser refers to:
[Physical Agents in Rehabilitation/Cameron/5th Ed./Pg. 307]
A. IR laser B. He-Ne laser
C. Diode based units D. None of the above

Q 219. The term population inversion refers to:
A. A state where elections in the metastable level > ground level
B. A state where electrons in the ground level > metastable level
C. A state of electron jump
D. None of the above

Q 220. The effect of laser in nerve conduction is to:
[Physical Agents in Rehabilitation/Cameron/5th Ed./Pg. 314]
A. Increase rate of conduction
B. Decrease rate of conduction
C. May increase rate decrease conduction
D. None of the above

Q 221. In physiotherapy the class of laser used is:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 437]
A. Class-1 B. Class-4
C. Class-2 D. Class-3

Q 222. Laser promotes wound healing by:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 442]
A. Cell proliferation
B. Increase in RNA production
C. Increase in collagen formation
D. All of the above

Q 223. Laser beam is characterized by:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 433–434]
A. Monochromaticity B. Coherence
C. Collimation D. All of the above

Q 224. What is the wavelength of radiation emitted by He-Ne laser?
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 383]
A. 833 nm B. 694.3 nm
C. 633 nm D. None of the above

Q 225. The rate at which laser energy produced or absorbed is measured in:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 384]
A. Joules B. J/s
C. J/m^2 D. J/cm^2

Q 226. When treating a large wound, the method of application of laser selected is:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 386]
A. Grid method B. Scanning method
C. Grid or scanning method D. None of the above

Q 227. Laser acronym is used for:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 383]
A. Low amplitude stimulated electrical response
B. Light amplification by stimulated emission of radiation
C. Light amplitude of strong electrical rays
D. Light amplification by stimulated echogenic response

Q 228. TENS with long-duration high amplitude pulses used to control pain, also called low-rate TENS:
[Physical Agents in Rehabilitation/Cameron/5th Ed./Pg. 268]
A. Acupuncture-LIKE tens B. Burst mode TENS
C. Conventional TENS D. All of the above

Q 229. Cold lasers are used in treatment of:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 385]
A. Fractures B. Soft tissues injuries
C. Cartilaginous injuries D. Others

Cryotherapy

Q 230. Which of the following statement is false?
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 295–296]
A. Motor conduction velocity of nerves decreases with cooling
B. Cooling reduces the metabolic rate of tissues
C. Motor skills are enhanced as a result of cooling
D. Cooling diminishes muscle strength

Q 231. The alternating vasodilatation and vasoconstriction during the application of cold is:
[Electrotherapy Clayton/9th Ed./Pg. 200]
A. Joules effect B. Turners effect
C. Lewis hunting reaction D. Hunters effect

Answers	211 B	212 B	213 C	214 B	215 D	216 C	217 B	218 B	219 A	220 A	221 D	222 D
	223 D	224 C	225 D	226 C	227 B	228 A	229 A	230 C	231 C			

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Q 232. When ice is applied to the body the initial reaction is:
[Electrotherapy Clayton/9th Ed./Pg. 200]
A. Vasoconstriction B. Vasodilatation
C. Increase in blood pressure D. Fall in blood pressure

Q 233. When vasodilatation is not desired, the duration of cryotherapy should be:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 287]
A. 30 minutes
B. More than 15 minutes
C. Less than 15 minutes
D. None of the above

Q 234. The pattern of heat to cold application in contrast bath is:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 221]
A. 3 minutes of hot bath followed by 1 minute of cold bath
B. 4 minutes of hot bath followed by 1 minutes of cold
C. 3 minutes of hot bath followed by 2 minutes of cold bath
D. None of the above

Q 235. Optimal temperature for the cold pack therapy is between:
[Physical Agent in Rehabilitation/ Cameron/2nd Ed./Pg. 48]
A. 10–15°C B. –10–15°C
C. 5–10°C D. –5–0°C

Q 236. For immediate management of soft tissue injury acronym RICE stands for:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 426]
A. Rubbing, instant heat, clean and elevation
B. Reassurance, immunization, cold and electrical stimulation
C. Rest, ice, compression and elevation
D. Resisted, isometric contracted by electric stimulation

Q 237. To reduce spasticity following modality is more suitable:
[Physical Agent in Rehabilitation/ Cameron/2nd Ed./Pg. 180]
A. Cryotherapy B. Ultrasonic
C. TENS D. Hot packs

Q 238. A physical therapist immerses a patient's edematous ankle in cold water. When a body part comes in direct contact with a cold agent the energy is transferred through:
[Electrotherapy Clayton/9th Ed./Pg. 5]
A. Conduction B. Convection
C. Evaporation D. Radiation

Q 239. Which objective would not be accomplished using cold packs on an involved lower extremity?
[Physical Agent in Rehabilitation/ Cameron/2nd Ed./Pg. 135]
A. Decrease nerve conduction velocity
B. Increase vasodilation
C. Decrease metabolism
D. Temporarily reduce spasticity

Q 240. A therapist tests a small area of skin for hypersensitivity prior to using a cold immersion bath. The patient begins to demonstrate evidence of cold intolerance within 60 seconds after cold application. The most appropriate response is to:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 144]
A. Limit cold exposure to ten minutes or less
B. Select an alternative cryotherapeutic agent
C. Continue with the cold immersion bath
D. Discontinue cold application and document you findings

Traction

Q 241. The traction used to immobilize a symptomatic spinal area:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 310]
A. Intermittent traction B. Static traction
C. Continuous traction D. None of the above

Q 242. In cervical spine, posterior vertebral separation occurs at a flexion angel of:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 486]
A. 5° B. 15°
C. 20–30° D. None of the above

Q 243. To apply tractive force to upper cervical spine:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 486]
A. The spine should be kept in extension
B. The spine should be kept neutral
C. The spine should be kept in flexion
D. None of the above

Q 244. In prone lying the lumbar spine is:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 310]
A. Flexed
B. Partially extended
C. Neither flexed nor extended
D. None of the above

Q 245. Which of the following is a contraindication for cervical traction?
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 305]
A. Cervical spondylosis B. Rheumatoid arthritis
C. Muscle spasm D. None of the above

Q 246. Which one of the following professionals advocated the use traction first?
A. Mackenzie B. Mennel
C. Cyriax D. None of the above

Q 247. Continuous traction is applied with:
[Physical Agent in Rehabilitation/ Cameron/2nd Ed./Pg. 318–319]
A. Small weights for long periods of time
B. Small weights for short periods of time
C. Heavier weights for long periods of time
D. Heavier weights for short periods of time

Q 248. A physical therapist receives a referral for lumbar traction on a 61-year-old female diagnosed with chronic lumbar pain. During the history the patient states that she sustained a compression fracture at the L4 level six weeks ago. The most appropriate action is:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 485]
A. Initiate lumbar traction in a prone position only
B. Initiate lumbar traction since the compression fracture was six weeks age
C. Contact the physician and discuss your concerns
D. Inform the physician that the referral showed poor judgment

Answers	232 A	233 C	234 A	235 A	236 C	237 A	238 A	239 B	240 D	241 C	242 C	243 A
	244 B	245 B	246 C	247 A	248 C							

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Q 249. A therapist designs a plan of care for a patient with left hemiparesis. Which treatment option would not assist with the facilitation of motor return and control?
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 308]
A. Biofeedback
B. Icing
C. Functional electrical stimulation
D. Back's traction

Q 250. The tractive force applied for the lumber spine in PIVD is:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 324]
A. 50% of body weight
B. 25% of body weight
C. 75% of body weight
D. None of the above

Q 251. The tractive force applied for cervical spine in PIVD is:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 324]
A. 50% of body weight
B. 25% of body weight
C. 5–7 kg
D. None of the above

Q 252. For joint distraction the tractive force required in cervical spine is:
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 324]
A. 7% of body weight
B. 25% of body weight
C. 5–7 kg
D. None of the above

Q 253. Which of the following is a contraindication for lumbar traction?
[Physical Agent in Rehabilitation/Cameron/2nd Ed./Pg. 324]
A. Cord signs
B. PIVD
C. Muscle spasm
D. None of the above

Electrostatics

Q 254. The law that gives reciprocal relationship between the distance and intensity from the source to surface is:
[Electrotherapy Clayton/9th Ed./Pg. 243]
A. Grotthus law
B. Inverse square law
C. Cosine law
D. None of the above

Q 255. The reflector that makes the rays to emerge parallel from its surface, thereby having uniform irradiations a:
[Electrotherapy Simplified/Nanda/9th Ed./Pg. 423]
A. Spherical reflector
B. Parabolic reflector
C. Plane mirror
D. None of the above

Q 256. The ability of a conductor to have electric current induced is known as:
[Electrotherapy Clayton/9th Ed./Pg. 21,115]
A. Resistance
B. Impedance
C. Inductance
D. Conductance

Q 257. The capacitance of a condenser is:
[Electrotherapy Clayton/9th Ed./Pg. 37]
A. The ratio of the charge to its potential
B. Product of its charge to potential
C. Ratio of its potential to the charge
D. Product of charge and potential

Q 258. Dielectric constant of dry air is:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 15]
A. 2
B. 1
C. 5
D. 10

Q 259. In a condenser the spacing material should have:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 5]
A. High dielectric constant
B. Low dielectric constant
C. Both A, B
D. None of the above

Q 260. Thoracic outlet syndrome is usually diagnosed by:
[Physical Agents in Rehabilitation/Cameron/5th Ed./Pg. 292]
A. Nerve conduction velocity tests and EMG
B. MRI and CT
C. Arteriograms and ultrasound
D. Careful clinical examination

Electrodiagnosis

Q 261. Statement is true:
[Electrotherapy/Clayton/9th Ed./Pg. 60]
A. Rheobase is the duration of impulse that produces a muscle contraction
B. In an UMN lesion there is an altered response to electrical stimulation
C. A current which rises or falls suddenly is more effective in stimulating an innervated muscle
D. Strength—duration curve indicates the site of lesion

Q 262. A normal pulse ratio value should be:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 223]
A. Above 2.2
B. 2.2 and less
C. Below 3.2
D. None of the above

Q 263. Insertional activity is found in:
[Physical Rehabilitation O'Sullivan/4th Ed./Pg. 222]
A. Denervated muscle
B. Innervated muscle
C. Both A and B
D. None of the above

Q 264. An EMG potential is called polyphasic if:
[Physical Rehabilitation O'Sullivan/4th Ed./Pg. 223]
A. It has two phases
B. It has four phases
C. It has more than four phases
D. None of the above

Q 265. S-D curve was used to investigate human nerve injuries by:
[Physical Rehabilitation O'Sullivan/4th Ed./Pg. 212]
A. Adrian
B. Erb
C. Duchenne
D. None of the above

Q 266. The normal values of motor NCV in the upper limb are:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 226]
A. Less than 40 m/s
B. 45–70 m/s
C. 70–80 m/s
D. None of the above

Q 267. Abnormal dorsal root function in radiculopathies shows:
[Electrotherapy Simplified/Nanda/1st Ed./Pg. 227]
A. Increased H-reflex latency
B. Decreased H-reflex latency
C. Normal H-reflex latency
D. None of the above

Answers	249 D	250 B	251 C	252 A	253 A	254 B	255 B	256 C	257 A	258 B	259 B	260 B
	261 C	262 B	263 B	264 C	265 A	266 B	267 B					

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Q 268. Which of the following EMG picture is true in the diagnosis of myopathy?

[Physical Rehabilitation/O'Sullivan/4th Ed./Pg. 223]

A. Spontaneous activity and partial interference pattern of decreased amplitude and duration on volition
B. Spontaneous activity with short duration low amplitude polyphasic potential on volition
C. High frequency respective discharge with alternate increased and decreased in amplitude
D. None of the above

Q 269. In the event of cardiac arrest, the right step to follow immediately is:

[Tidy/Wright Bristol/4th Ed./Pg. 425]

A. Apply external cardiac massage and mouth to mouth breathing
B. Inform the head of the department
C. Call for the doctor
D. None of the above

Q 270. In addition to therapeutic intervention, the therapist should also do:

[Physical Rehabilitation O'Sullivan/5th Ed./Pg. 75]

A. Documentation
B. Counselling
C. Both A and B
D. None of the above

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Answers 268 B 269 A 270 C

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