### Physiotherapy

1. Short wave diathermy is contraindicated in which condition:
   - A. prostatitis
   - B. bronchitis
   - C. sinusitis
   - D. tuberculosis  
   **A**

2. Metal implants can be used with which modality:
   - A. short wave
   - B. microwave
   - C. interferential
   - D. ultrasound  
   **C**

3. Systemic Lupus Erythematosus should not be heated with:
   - A. UV
   - B. TENS
   - C. cryotherapy
   - D. low volt  
   **A**

4. Dupuytren’s contracture is best treated with:
   - A. low volt
   - B. high volt
   - C. ultrasound
   - D. TENS  
   **C**

5. Heat has which of the following effects:
   - A. increases capillary hydrostatic pressure
   - B. decreases capillary hydrostatic pressure
   - C. increases vasodilation
   - D. decreases phagocytosis  
   **C**

6. Interferential can be used with:
   - A. implants
   - B. thrombosis
   - C. pregnancy
   - D. malignancy  
   **A**

7. Which massage uses stroking:
   - A. effleurage
   - B. petrissage
   - C. tapotement
   - D. friction  
   **A**

8. Adhesive capsulitis should not be treated with:
   - A. massage
   - B. joint mobilization
   - C. exercise pressure
   - D. immobilization  
   **D**

9. What exercises are good for female incontinence:
   - A. Kegel exercises
   - B. Buerger Allen’s
   - C. Williams
   - D. McKenzie  
   **A**

10. Which modality is contraindicated for hypermobile joints?
    - A. intermittent fraction
    - B. tapping
    - C. racing
    - D. rest  
    **A**

11. Inverted traction would be contraindicated with:
    - A. hypertension
    - B. DJD
    - C. chronic disc bulge
    - D. chronic back pain  
    **A**

12. When performing cryokinetics what is done first:
    - A. numb the area
    - B. heat the area
    - C. exercise the area
    - D. rest the area  
    **A**

13. What is the order of the Huntington reaction:
    - A. cold, burning, aching, numbness
    - B. periodic vasodilatation of vessels from the cold
    - C. burning, cold, aching, numbness
    - D. cold, aching, burning, numbness  
    **A**

14. Tissue elasticity is increased with:
    - A. heat
    - B. cold
    - C. ice
    - D. electrical current  
    **A**

15. Why is a towel used with short-wave diathermy?
    - A. to avoid burning patient
    - B. to avoid shock
    - C. to conduct current
    - D. to reduce thermal effect  
    **A**

16. The best modality for a patient who sprained his ankle three days ago is:
    - A. contrast bath
    - B. infrared
    - C. UV
    - D. microwave  
    **D**

17. In which condition are whirlpool baths contraindicated:
    - A. burns
    - B. sprains
    - C. arterial insufficiency
    - D. hypertension  
    **B**

18. For which condition is a salz bath contraindicated:
    - A. dysmenorrhea
    - B. hemorrhoids
    - C. anhidrosis
    - D. prostatitis  
    **C**

19. The best modality for Raynauds is:
    - A. near UV
    - B. superficial heat
    - C. cryotherapy
    - D. ultrasound  
    **B**

20. Minimal erythemal dosage produces:
    - A. slight pigmentation
    - B. no redness
    - C. extreme redness
    - D. first degree burn  
    **A**

21. Orificial UV has what kind of effect:
    - A. bactericidal
    - B. mechanical
    - C. electrokinetic
    - D. pain control  
    **A**

22. What effect does short-wave diathermy have:
    - A. thermal
    - B. mechanical
    - C. electrokinetic
    - D. hypothermal  
    **A**

23. Which modality uses high frequency current:
    - A. high volt galvanic
    - B. ultrasound
    - C. Interferential
    - D. TENS  
    **B**

24. What chemical is used for fungal infections:
    - A. CuSO
    - B. KI
    - C. MgSO
    - D. sodium salicylate  
    **A**

25. What would be an indication or condition where ultrasound would be used:
    - A. herpes zoster
    - B. fracture
    - C. diabetes mellitus
    - D. Raynauds  
    **A**

26. Ultrasound which is used to drive in fluids is called:
    - A. phonophoresis
    - B. iontophoresis
    - C. electrophoresis
    - D. cataphoresis  
    **A**

27. Contraindications to traction include:
    - A. DJD
    - B. hypomotility
    - C. fibrosis
    - D. spinal cord compression  
    **D**

28. Which is the best modality for polar effects:
    - A. high volt galvanic
    - B. low volt galvanic
    - C. TENS
    - D. interferential  
    **B**
29. Interrupted galvanic causes
A. sharp intermittent contractions
B. strong, single contractions
C. no contractions
D. used for iontophoresis  **B**

30. Which modality goes up gradually and then drops:
A. faradic
B. galvanic
D. interferential
D. ultrasound: **A**

31. What is the effect on tissue at the negative pole:
A. drops:
D. 4-6 minutes

32. The smaller electrode is
A. more active
B. less active
C. indifferent
D. dispersive  **A**

33. The monopolar pad in galvanic is for:
A. large muscles
B. large area
C. single muscles
D. small area  **B**

34. Which of the following is a contraindication to ultrasound:
A. anesthesia
B. decreased ROM
C. sprain
D. strain  **A**

35. Subacute conditions are treated with ultrasound for:
A. 4-6 minutes
B. 10-20 minutes
C. 20-30 minutes
D. 30-40 minutes  **A**

36. Which is the best modality to use with a diabetic amputee:
A. TENS
B. diathermy
C. ultrasound
D. UV  **A**

37. What is the most common conventional use of a TENS:
A. scoliosis
B. non invasive for pain
C. muscle spasms
D. atrophy  **B**

38. When are enkephalins produced:
A. during exercise
B. in response to stress
C. in response to pain
D. during sleep  **A**

39. If used for a prolonged period of time you can get skin irritation with which modality:
A. TENS
B. ice
C. UV
D. 1.R.  **A**

40. What modality should be used for contact dermatitis with red, swollen, weeping blisters:
A. UV
B. cryotherapy
C. hydrocollator pack
D. TENS  **B**

41. A coaxial cable is used with
A. interferential
B. diathermy
C. low volt
D. ultrasound  **B**

42. Which is a physiological effect of shortwave diathermy:
A. polar effect
B. increased vasodilation
C. hypothermal
D. electrokinetic  **B**

43. Electromotive force is measured In
A. wattage
B. amperage
C. volts
D. ohms  **C**

44. How do you stretch the infraspinatus muscle:
A. external rotation
B. internal rotation
C. abduction
D. adduction  **B**

45. To totally abduct the shoulder, the shoulder must first:
A. flex
B. externally rotate
C. extend
D. internally rotate  **B**

46. Which exercise causes the greatest increase in heart rate:
A. active isometric
B. active isotonic
C. passive
D. active with assistance  **B**

47. The best way to improve coordination is:
A. many complex movements
B. one simple movement
C. no movement
D. limited movement  **A**

48. In a patient with osseous arthritis and limited range of motion, what Is contraindicated:
A. soft cervical collar
B. fraction
C. exercise
D. heat  **A**

49. Wall walking and pendular exercises are for the
A. knee
B. knee
C. hip
D. foot  **A**

50. If the patient has a decrease in the lumbar lordosis, what exercise should you prescribe:
A. anterior pelvic tilt
B. posterior pelvic tilt
C. hip rotation
D. hip flexion  **A**

51. With anterior pelvic tilt, what other exercises must be done:
A. strengthen abdominals
B. strengthen gluteals
C. stretch hamstrings
D. all of the above  **D**

52. In a patient with subacute low back pain and disc problems aggravated by movement, what modality Is best for the pain and muscle spasm:
A. low volt galvanism
B. high volt galvanism
C. TENS
D. diathermy  **A**

53. Which modality is best for muscle spasm:
A. tetanizing current
B. surge current
C. intermittent current
D. paraffin bath  **A**

54. Strengthening the vastus medialis muscle helps the knee because it:
A. decreases the Q angle
B. decreases the lateral displacement of the patella
C. increases the mobility of the patella
D. decreases tibial torsion  **B**

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1. Electro-stimulation of the supraorbital nerve to support reflex would test the integrity the nerve:
A. trigeminal
B. ocuomotor
C. facial
D. hypoglossal  **A**

2. The effects of galvanic and diathermy are:
A. polar effect
B. increased vasodilation
C. hypothermal
D. electrokinetic  **B**
2. A 6-year-old male presents 2 months after a surgical repair of a hip fracture with a nail. Which modality is contraindicated in treatment of the pain, muscle spasm, and decreased ROM:
A. infrared
B. pulsed ultrasound
C. hydrocollator pack
D. shortwave diathermy

3. A patient presents with a long history of cervical degenerative arthritis with foramina encroachment. The treatment of choice is:
A. cryotherapy
B. resistance exercise
C. muscle stimulation
D. cervical traction
E. continuous ultrasound

4. A positive Phalens test is contraindicated for which therapy:
A. ultrasound over the volar ligament
B. strengthening of the wrist extensor
C. immobilization of the wrist
D. strengthening of the wrist flexors

5. A significantly decreased contraction in response to electrical stimulation of a mildly atrophied muscle when compared with the contraction on the opposite side indicates:
A. a lower motor neuron lesion
B. hyper-irritability of the contralateral muscle
C. hyper-irritability of the atrophied muscle
D. a normal finding

6. One megahertz over the sound frequency can be used to diagnose:
A. fractures
B. gallstones
C. sprains
D. tumors

7. A grade 3 strength of muscles is one in which transverse joints predisposes the affected area to develop:
A. laxity
B. osteochondrosis
C. hypermobility
D. contraction

8. The electrical stimulation of a nerve which sustains complete neuropaenia two weeks previously will elicit which response:
A. normal reaction
B. total RD
C. partial RD
D. absolute RD

9. Which therapy is contraindicated in examination of a person with a positive Trendelenburg test:
A. strengthening of the hip abductors
B. electrical muscle stimulation to the gluteus medius
C. stretching the hip adductors
D. strengthening the hip adductors

10. Exam reveals acute subdeltoid bursitis. Which therapy is contraindicated:
A. interferential
B. 5W diathermy
C. cold pack
D. high volt direct current
E. TENS

11. The component of electrical stimulation which has the greatest effect in determining the accommodation of stimulated muscle:
A. pulsed repetition rate
B. pulsed duration
C. pulsed rise time
D. amplitude

12. What determines the rate at which a nerve fiber fires:
A. pulsed width
B. pulsed repetition
C. amplitude of the current
D. pulsed and rise time

13. A unit of electrical resistance is:
A. faradic
B. Ohm
C. hertz
D. Coulomb

14. What occurs during the test for galvanic current polarity:
A. hydrogen bubbles form at the positive pole
B. blue litmus paper turns red at the positive pole
C. red litmus paper turns blue at the positive pole
D. oxygen bubbles form at the negative pole
E. no bubbles form at the positive pole

15. The mechanism which causes high frequency alternating current to create mechanical ultrasonic vibration is known as:
A. interolar
B. polar
C. electromagnetic
D. piezoelectric

16. The mode of transfer that occurs with ultrasound is:
A. conduction
B. conversion
C. radiation
D. convection

17. Which modality uses conduction as a means of heat transfers:
A. hydrocollator
B. infrared
C. hydrotherapy
D. short wave diathermy

18. The transfer of heat from a fluid moving over a body surface is known as:
A. circumbution
B. conduction
C. convection
D. radiation

19. Chlorine iontophoresis has which effect:
A. anti-fungal
B. analgesic
C. decongestant
D. suppurative

20. Which modality possesses the strongest polar effects:
A. sine wave
B. low volt indirect current
C. high volt direct current
D. ultrasound

21. Infrared is most effective at degrees of angulation from source to patient:
A. 30
B. 45
C. 60
D. 90

22. Which is a systemic effect of heat:
A. decreased alkalinity of blood
B. decreased circulation
C. increased blood pressure
D. increased mucous formation
E. decreased respiration

23. Which heat modality is a maximum penetrating dose of less than 10 mm:
A. infrared
B. ultrasound
C. microwave diathermy
D. shortwave diathermy

24. Which is not a physiological effect of localized heating:
A. increased phagocytosis
B. sedation of nerve endings
C. capillary dilation
D. increased blood pressure
E. relief of muscular spasms

25. Which is not an effect of continuous moderate traction therapy:
A. increasing muscle tone
B. immobilizing fractures
C. relieving compression effects
D. relieving muscular spasms

26. The major effect of diathermy is:
A. vasodilation of the blood vessels
B. depolarization of spastic muscles
C. expansion of tissue spaces
D. micro-massage of tissues
E. chemical change in the tissues

27. First degree erythema is characterized by:
A. slight reddening
B. desquamation
C. blistering
D. intense reddening
Physiotherapy

28. Which modality does not produce heat in body tissue:
   A. ultrasound
   B. short wave diathermy
   C. microwave diathermy
   D. interferential current

29. Paraffin is best for the treatment of:
   A. foot ulcers
   B. arthritis in the hands
   C. lumbar strain
   D. temporary paralysis

30. Which is not effective treatment for trigger points:
   A. sustained pressure
   B. ultrasound
   C. electrical stimulation
   D. ice massage
   E. infrared

31. Which is not a contraindication to infrared therapy:
   A. acute pyrexia
   B. active gangrene
   C. simple fracture
   D. active TB

32. Contrast baths are indicated for:
   A. thermal anesthesia
   B. arterial insufficiency
   C. advanced arteriosclerosis
   D. stress fracture

33. Which is contraindicated for the treatment of multiple sclerosis:
   A. massage
   B. galvanism
   C. cold
   D. heat

34. Infrared is contraindicated in:
   A. Osgood Schlatter
   B. Raynauds disease
   C. arteriosclerosis obliterans
   D. tendonitis, obliterans

35. Perirectal abscesses are best treated with:
   A. sifz baths
   B. moist baths
   C. massage
   D. infrared

36. The purpose of transitional movement during ultrasound application is to:
   A. increase depth of penetration
   B. provide superficial massage
   C. prevent periosteal irritation
   D. promote conduction

37. The butterfly electrode is used to treat:
   A. sinusitis
   B. diabetes
   C. phlebitis
   D. fractures
   E. bursitis

38. The physiological effect of pulsed ultrasound is increased:
   A. vasodilation
   B. vasoconstriction
   C. fibrostatic density
   D. orthostatic density

39. Which is a contraindication for the use of ultrasound:
   A. bursitis
   B. anesthesis
   C. tennis elbow
   D. osteoarthritis
   E. scar tissue

40. Ultrasound is contraindicated for:
   A. herpes zoster
   B. spondylitis
   C. Raynauds disease
   D. uveitis

41. Shortwave diathermy is contraindicated for a/an:
   A. tubercular joint
   B. oflisis media
   C. advanced osteoporosis
   D. large varicosities
   E. all of the above

42. The modality of choice for pneumonia is:
   A. short diathermy
   B. ultrasound
   C. negative galvanism
   D. positive galvanism
   E. sine wave

43. During the application of underwater ultrasound the transducers are maintained at a distance of inches from the part being treated:
   A. 1/2-1
   B. 3-4
   C. 5-6
   D. 6-8

44. Which condition is contraindicated for shortwave diathermy treatment:
   A. neuralgia
   B. meralgia
   C. sinusitis
   D. phlebitis
   E. diabetes

45. The best conducting medium for ultrasound is:
   A. mineral oil
   B. dioxotrophic gel
   C. air
   D. water

46. When receiving an ice massage sensation is received in which sequence:
   A. burning, aching, numbness, cold
   B. numbness, aching, burning, cold
   C. burning, cold, burning, numbness
   D. cold, burning, aching, numbness

47. Cryotherapy is contraindicated for:
   A. neoplastic disease
   B. chronic Rheumatoid arthritis
   C. peripheral vascular disease
   D. myositis ossificans

48. The treatment of choice for the pain accompanying acute grade one ankle sprain:
   A. short diathermy
   B. continuous US
   C. immobilization
   D. spray and stretch

49. The modality of choice for a 40 year-old mate with a 2 hour post traumatic cervical hyperflexion/ hyperextension injury which has produced muscle spasm, loss of range of motion and complicated by a suture for a laceration:
   A. cryotherapy
   B. continuous ultrasound
   C. hot and cold contrast
   D. low volt galvanism
   E. intermittent traction

50. The treatment of choice for acute inflammation of the trochanteric bursa is:
   A. active massage
   B. negative galvanism
   C. infrared
   D. Ice packs

51. The woods lamp assists in the diagnosis of:
   A. Lupus erythematosus
   B. fungal infections
   C. hyperkalemia
   D. dermatosis pigmentosum

52. A contraindication of whole body UV is:
   A. psoriasis
   B. patent taking Vitamin D
   C. patient taking tetracycline
   D. extreme generalized osteoporosis

53. A minimal erythemal dose determined by the patch test is equivalent to _ grade erythema:
   A. 1
   B. 2
   C. 3
   D. 4

54. The primary therapeutic effect of orificial UV is:
   A. bactericidal
   B. diagnostic
   C. anti-arthritis
   D. pigment

55. Which is not an effect of interferential current:
   A. smooth muscle relaxant
   B. pain reduction
   C. skeletal muscle contraction
   D. superficial heating
60. High voltage galvanism is not used for:
A. iontophoresis
B. tissue repair
C. spasticity reduction
D. electro-anesthesia
E. circulation enhancement
***A***

61. What is the dosage for low volt galvanism:
A. 1 milliamperes per square inch of electrode
B. 2 watts per square inch of electrode
C. patient tolerance
D. 1 watts per square inch of electrode
***A***

62. A 33-year-old woman with cystitis experiencing suprapubic immediate pain at the end of urination.
   The best treatment is:
   A. short wave diathermy over the kidneys
   B. ultrasound over sacrum and suprapubic area
   C. microwave diathermy over suprapubic area
   D. interferential current over pubic area and lower abdomen
   ***C***

63. In the treatment of post surgical pain with a battery powered TENS unit the electrode should be placed:
A. as close to the incision as possible
B. contralateral to the incision
C. distal to the incision
D. on the Incision
   ***B***

64. Which modes of high voltage pulse direct current is indicated as adjunctive therapy is indicated to increase ROM:
   A. continuous
   B. surging
   C. reciprocating
   D. pulsing
   ***B***

65. Which type of feedback is best for the treatment of essential hypertension:
   A. galvanic skin
   B. electroencephalogram
   C. temperature
   D. electromyogram
   ***A***

66. TENS therapy is least effective in the treatment of:
   A. malignancy
   B. fracture
   C. psychogenic
   D. myofacial
   ***A***

67. To enhance the effectiveness of high voltage galvanism when treating chronic paraspinal muscle spasms:
   A. sandbag for electrode stabilization
   B. hydrocollator pack
   C. ice pack
   D. velcro elastic strap
   E. electric heating pad
   ***B***

68. Which method of Interferential is contraindicated for acute ankle edema:
   A. vacuum electrode pads
   B. eadogenous electrode pads
   C. self-adhesive pads
   D. plate electrode pads
   ***A***

69. Interferential current is used for which effect:
   A. edema reduction
   B. lymphatic flow
   C. muscle re-education
   D. analgesia
   ***A***

70. Which is inappropriate in the use of high voltage galvanic:
   A. can be used in combination with ultrasound
   B. can be used on trigger points with appropriate action
   C. can be used with metal implants or a pacemaker
   D. can be used for endorphin production and pain control
   ***C***

71. Hyperstimulation analgesia affects which neurological fibers:
   A. C fibers
   B. large A
   C. type I
   D. lower motor neuron
   ***B***

72. When 2 pads of unequal size are used in the application of direct current what describes the activity of the smaller pad:
   A. less active
   B. more active
   C. neutral
   D. disburstive
   ***B***

73. A Lenox hill derotation brace is used to stabilize a knee with a weak:
   A. medial meniscus
   B. medial collateral
   C. posterior cruciate
   D. anterior cruciate
   ***A***

74. Which is a contraindication to spinal traction:
   A. paravertebral muscle spasm
   B. spinal adhesions
   C. infectious arthrosis
   D. recurrent subluxation
   E. scoliosis
   ***C***

75. Intermittent lumbar traction is indicated in which patient:
   A. 45 year old female weighing 250 lbs with facet syndrome and increased sacral base angle
   B. 30 year old man with acute lumbar disc protrusion causing antalgia, foot drop, positive Valsalva and Soto-Hall
   C. 35 year old female with monthly low back pain and anterior costal column pseudoarthrosis
   D. 65 year old female with low back spasms and angular dorsal kyphosis
   ***B***

76. What is an effect of high frequency therapy:
   A. edema reduction
   B. analgesic
   C. postural change
   D. hypo-myotonia
   ***B***

77. Massage to reduce edema should be done:
   A. toward the muscle fibers
   B. along fascial planes
   C. across the muscle fibers
   D. along venous drainage
   E. following arterial circulation
   ***D***

78. An elastic support to heal patella malalignment syndrome should provide pressure in which direction:
   A. lateral to medial
   B. medial to lateral
   C. superior to inferior
   D. Inferior to superior
   ***A***

79. What is a therapeutic effect of massage:
   A. relief of pain
   B. capsular swelling
   C. Increased muscle strength
   D. increased venous return
   E. mobilization of contracted tissue
   ***C***
81. The function of a dynamic splint is to:
A. prevent joint movement
B. reduce incoordination
C. minimize muscle balance
D. maximize exercise capabilities

82. Which massage is mainly used for postural drainage of lung field
A. effleurage
B. petrissage
C. friction
D. tapotement

83. _____ is not an effect of spinal bracing:
A. increase segmental motion above and below the area braced
B. increased intra-discal pressure
C. decreased abdominal muscle activity
D. decreased lower extremity venous return

84. The warm down phase of aerobic exercise is important to prevent
A. heat stroke
B. heat exhaustion
C. heart attack
D. sprain

85. After strenuous exercise the content of muscle is reduced and the concentration in the blood rises:
A. glycogen; lactic acid
B. protein; ketones
C. oxygen; glucose
D. fat; glycogen

86. What types of exercises causes the greatest increase in heart rate:
A. active isotonic
B. active Isometric
C. active assistive
D. passive

87. To maintain the maximum benefit, aerobic exercise should be done a minimum of _____ times per week.
A. 2
B. 3
C. 4
D. 5

88. What is the primary physiological effect of passive exercise:
A. increased arterial flow
B. increased respiration
C. disburse joint adhesions
D. improve nerve tone

89. What muscle should be given priority when initiating a stretch program for compensatory foot pronation:
A. hamstrings
B. quadriceps
C. ankle plantar flexors
D. ankle dorsiflexors

90. Which is the knee exercise of choice for patellar femoral pain and vastus medius weakness:
A. full range isotonic extension
B. isometric extension at 90° of flexion
C. Isometric extension only to the last 30°
D. full range isometric flexion

91. William’s flexion exercises are used to rehabilitate the:
A. cervical
B. thoracic
C. lumbar hip

92. Posterior pelvic tilt performed actively while supine will the lumbar lordosis and strengthen the _____ muscles.
A. increase abdominal
B. increased erector spinae
C. decreased abdominal
D. decreased erector spinae

93. _____ is not an effect of spinal bracing:
A. decreasing lower extremity venous return
B. increased intra-discal pressure
C. decreased abdominal muscle activity
D. decreased lower extremity venous return

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C. 4
D. 5
14. A contraindication to shortwave diathermy is:
A. ankylosing spondylitis
B. myositis
C. acute osteomyelitis
D. traumatic arthritis

15. The best angle of pull for cervical traction with the neck in flexion is:
A. 4-6°
B. 11-15°
C. 20-30°
D. 35-45°
E. 50-60°

16. When the patient complains of a sharp burning or aching feeling when using direct contact ultrasound is due to:
A. skin overdose
B. cavitation
C. peristomal shear wave
D. improper conduction medium

17. Neurumuscular skeletal underwater exercises are usually performed in a:
A. Hubbard tank
B. sitz bath
C. contrast bath
D. sulfur bath
E. deprivation tank

18. The modality capable of directly heating the hip joint is:
A. paraffin bath
B. ultrasound
C. luminous infrared
D. hot moist packs
E. galvanism

19. The best description of interferential current is:
A. maximum frequency
B. medium frequency
C. low frequency
D. high frequency
E. galvanic

20. In which of the following are passive exercises contraindicated:
A. rheumatoid arthritis
B. fibrous ankylosis
C. Acute tuberculosis

<table>
<thead>
<tr>
<th>Exercise Options</th>
<th>Contraindicated</th>
<th>Physiotherapy</th>
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14. A contraindication to shortwave diathermy is:
A. ankylosing spondylitis
B. myositis
C. acute osteomyelitis
D. traumatic arthritis

15. The best angle of pull for cervical traction with the neck in flexion is:
A. 4-6°
B. 11-15°
C. 20-30°
D. 35-45°
E. 50-60°

16. When the patient complains of a sharp burning or aching feeling when using direct contact ultrasound is due to:
A. skin overdose
B. cavitation
C. peristomal shear wave
D. improper conduction medium

17. Neurumuscular skeletal underwater exercises are usually performed in a:
A. Hubbard tank
B. sitz bath
C. contrast bath
D. sulfur bath
E. deprivation tank

18. The modality capable of directly heating the hip joint is:
A. paraffin bath
B. ultrasound
C. luminous infrared
D. hot moist packs
E. galvanism

19. The best description of interferential current is:
A. maximum frequency
B. medium frequency
C. low frequency
D. high frequency
E. galvanic

20. In which of the following are passive exercises contraindicated:
A. rheumatoid arthritis
B. fibrous ankylosis
C. Acute tuberculosis

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40. Atony of the colon is best treated with:
A. ultrasound
B. sine wave
C. negative galvanism
D. positive galvanism
E. ultraviolet ***A***

41. What type of exercise is described: resistance is maximal throughout the entire range of motion:
A. isometric
B. isotonic
C. isokinetic
D. isolation
E. eccentric ***A***

42. Underwater exercise is not indicated for which condition:
A. Bells palsy
B. poliomyelitis
C. polynarthritis
D. paraplegia
E. hydrophobia ***C***

43. How long after an injury does adhesion formation begin:
A. 24 hours
B. 5 days
C. 2 weeks
D. 1 month
E. sine wave ***A***

44. Electrokinetic effects are produced by which of the following:
A. shortwave diathermy
B. microwave diathermy
C. ultraviolet
D. faradic current
E. uninterrupted galvanic current ***E***

45. Whirlpool treatment is not contraindicated in patient with:
A. burns
B. diabetic neuropathies
C. fever
D. hydrophobia ***A***

46. To insure the therapeutic effect of an ultrasound in a water bath you would:
A. increase the wattage
B. decrease the wattage
C. leave the wattage the same
D. heat the water

**Physiotherapy**

47. What is responsible for the deep heat produced by shortwave diathermy:
A. conduction
B. radiation
C. relative refractory period
D. tissue resistance
E. polarity effect ***B***

48. Why is luminous infrared better than moist packs when you want to relax a muscle spasm:
A. greater depth of penetration
B. can be applied directly to the skin
C. less chance of burning patient
D. can be applied over patients clothing ***D***

49. Which is true of bath water temperature:
A. warm baths tend to decrease heart rate and length of diastole
B. warm baths tend to increase muscle tone
C. cold baths increase the rate of nerve impulses
D. cold baths cause peripheral vasodilation
E. cold baths of short duration increase muscle tone and energy ***E***

50. The wood’s lamp is helpful in the diagnosis of:
A. lupus erythematosus
B. ringworm
C. skin rash of syphilis
E. fungus ***D***

51. Rapid gain in muscle strength can be accomplished in disuse atrophy by utilizing resistive railing:
A. isometric
B. repetition
C. speed
D. isotonic ***B***

52. In which range of scoliosis does one generally employ a Milwaukee brace:
A. 13-20°
B. 20-40°
C. 50-60°
D. 60-80° ***B***

53. In the primary treatment of an acute severe hyperflexion-hyperextension injury, in addition to ice which modality is used:
A. Intermittent traction
B. continuous ultrasound
C. cervical immobilization
D. faradic current
E. negative galvanism ***C***

54. When treating a patient with low back strain, the modality chosen should be given careful consideration when the patient:
A. is pregnant
B. has osteoarthritis
C. has facet syndrome
D. has spondylolisthesis
E. has diverticulitis ***B***

55. Interferential current is the superimposition of:
A. 1 direct current and one alternating current
B. 2 direct currents
C. 1 high frequency current and one low frequency current
D. two direct currents
E. two sinusoidal currents ***E***

56. In which of the following are whirlpool treatments contraindicated:
A. lupus erythematosus
B. ringworm
C. skin rash of syphilis
E. fungus ***D***

57. What produces the thermal effect of ultrasound:
A. alteration of pH
B. rectified selective diffusion
C. conversion of kinetic energy into heat
D. pressure gradations from dynamic pressure variations
E. conversion of electrical energy into mechanical energy ***E***

58. The best temperature for paraffin is:
A. 98°
B. 105°
C. 125°
D. 140°
E. 145° ***C***

59. Cryokinetics are thought to be especially effective for the treatment of:
A. dislocations
B. phlebitis
C. fractures
D. acute strains
E. high fevers ***D***

60. Cold quartz orificial ultraviolet irradiation is indicated to treat:
A. vaginal herpes simplex
B. venereal warts
C. Trichomonas vaginalis
D. Candida albicans ***D***

61. The best modality to force a muscle into relaxation is:
A. pulsating sinusoidal current
B. faradic current
C. tetanizing sinusoidal current
D. sine waves ***C***

62. To rehabilitate a meniscal knee injury which exercise should be employed first:
A. quadriceps extension with a weight boot
B. deep knee bends
C. straight leg raising
D. half squats
E. isometric quadriceps sitting ***E***

63. The greatest increase in heart rate is produced by which exercise:
A. active isometric
B. active isotonic
C. passive
D. active assisted ***A***
64. In a patient with lumbar disc pathology, it is important to eliminate or limit as part of their occupational activity:
A. lifting  
B. walking  
C. squatting  
D. standing  

65. What is the temperature of the water in which hot moist packs are stored:
A. 98  
B. 104  
C. 125  
D. 165  
E. 210  

66. Ultrasound is indicated for:
A. dyshidrosis  
B. thrombosis  
C. phlebitis  
D. neuroma  
E. arteriosclerosis  

67. Which modality can reduce serum glucose levels, is bacteriocidal and produces erythema:
A. diathermy  
B. thrombosis  
C. phlebitis  
D. neuroma  
E. arteriosclerosis  

68. Paraffin baths are best used to treat:
A. arthritis in the hands  
B. muscle spasms in the legs  
C. lumbar strain  
D. temporary paralysis  
E. foot ulceration  

69. The treatment of choice for PID is:
A. infrared  
B. ultrasound  
C. galvanic  
D. diathermy  
E. ultraviolet  

70. Which is not a characteristic of high voltage galvanism:
A. it uses 2-4000 Hz current  
B. it utilizes spiked current  
C. it involves 500 V electricity  
D. it exhibits polarity  
E. it requires the use of a large indifferent pad  

71. What is the best treatment for a 13 year old female who complains of pain on the front of the left patella and has a history of falling on her knee 6 months previously. On examination there are no gross abnormalities of the tibiofemoral joint. EMG shows a subclinical deficit in the vastus medialis muscle. The best treatment would be:
A. iontophoresis  
B. faradic stimulation  
C. direct ultrasound  
D. thermal sleeve support  
E. TENS  

72. To provide stability to a knee that has undergone unsuccessful repair of the anterior and posterior cruciate ligaments and medial collateral ligament, the best appliance would be which of the following:
A. Lertox Hill brace  
B. Bauer Black support  
C. Shultz Osgood Schlatter brace  
D. McDavid Argyll brace  
E. thermal sleeve support  

73. The most important reason to use a brace in scoliosis is to:
A. inhibit greater progression of the curve  
B. return the curvature to normal  
C. retard the growth process causing greater muscular tonicity  
D. improve self image  
E. reduce patient discomfort and improve cosmetics  

74. The Kromayer lamp is used with:
A. diathermy  
B. ultrasound  
C. microwave  
D. ultraviolet  
E. hot packs  

75. What theory is behind the control of pain using high frequency 100-200 hertz TENS:
A. Specificity theory  
B. Summation theory  
C. Faraday’s theory  
D. Gate-control theory  
E. Electrical theory  

76. Ultrasound is indicated for:
A. systemic lupus  
B. rickets  
C. hyperthyroidism  
D. renal insufficiency  
E. back pain  

77. What is the primary effect of galvanic current:
A. photochemical  
B. electomechanical  
C. kinetic  
D. electrochemical  
E. electrothermal  

78. Which modality transmits heat by conduction:
A. hot moist packs  
B. infrared  
C. diathermy  
D. ultrasound  
E. microwave  

79. The best treatment for spasm of a ureter due to a calculus or trauma is:
A. ultraviolet  
B. diathermy  
C. cryotherapy  
D. infrared  
E. positive galvanism  

80. Facial neuralgia is best treated with which modality:
A. galvanism  
B. ultraviolet  
C. diathermy  
D. tapotement  
E. hot packs  

81. The best treatment for lymphedema which follows a mastectomy is:
A. moist hot packs  
B. massage  
C. microwave diathermy  
D. cryotherapy  
E. shortwave diathermy  

82. In an acute moderate cervical hyperflexion injury with no instability noted on a lateral cervical flexion x-ray, which orthopedic support is indicated:
A. hard cervical collar  
B. halo cervical brace  
C. soft cervical collar  
D. poster cervical brace  

83. The Louisiana wrap is most appropriate for:
A. ligament damage to the knee  
B. tenosynovitis of the wrist  
C. ankle sprain  
D. uncomplicated shoulder dislocation  
E. carpal fracture  

84. On an x-ray study you note a compression fracture of the body of L-1. Which orthotic should be applied:
A. Taylor hyperextension brace  
B. body cast  
C. lumbar sacral corset  
D. chair back brace  
E. Williams flexion brace  

85. Transformation of one form of heat energy into another results in the transmission of heat due to:
A. conversion  
B. radiation  
C. convection  
D. reflection  
E. conduction  

86. What is the activity of the small pad when two pads of unequal size are used in the application of direct current:
A. less active  
B. neutral  
C. more active  
D. dispersive  

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**Physiotherapy**

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Physiotherapy

87. Ultraviolet treatment is contraindicated for diabetes mellitus because it:
   A. may exacerbate the condition
   B. may cause itching
   C. will effect insulin balance
   D. will aggravate neuropathies
   ***A***

88. The modality that dehydrates tissue, stops bleeding and attracts oxygen is:
   A. positive galvanic
   B. negative galvanic
   C. faradic current
   D. sinusoidal current
   E. microwave diathermy
   ***A***

89. A physiological effect of cryotherapy is:
   A. decreased acute pain and muscle spasm
   B. increased capillary permeability
   C. decreased muscle stiffness
   D. increased bleeding time due to trauma
   E. increased nerve irritability and conduction
   ***A***

90. The preferred treatment for lung congestion is:
   A. infrared
   B. ultrasound
   C. diathermy
   D. hot moist packs
   E. ultraviolet
   ***C***

91. What is the strength of the solution used in iontophoresis:
   A. .25
   B. .50
   C. 1-2
   D. 3-4
   E. 5-6
   ***C***

92. Deep kneading in massage is known
   A. effleurage
   B. petrissage
   C. tapotement
   D. stroking
   E. percussion
   ***B***

93. A young female with low back pain, hyperlordosis and weak abdominal muscles should be instructed not to do exercises:
   A. pelvic tilt
   B. partial sit-up
   C. knee to chest stretches
   D. lumbar extension
   ***D***

94. Vibration to assist in postural drainage should be applied after percussion and during:
   A. quiet inspiration
   B. quiet expiration
   C. forced expiration
   D. forced inspiration
   ***C***

95. To immobilize or support anatomical structures, static orthotics generally involve a ___ point system:
   A. 1
   B. 2
   C. 3
   D. 4
   E. 6
   ***C***

96. To treat using minimal erythemal dose which modality is employed:
   A. ultraviolet
   B. diathermy
   C. cryotherapy
   D. infrared
   E. hydrotherapy
   ***A***

97. can be used for diagnosis:
   A. ultraviolet
   B. microwave
   C. traction
   D. shortwave diathermy
   E. near infrared
   ***A***

98. The most effective weight for lumbar traction is:
   A. 10-40
   B. 40-50
   C. 60-120
   D. 120-140
   ***C***

99. When used in the treatment of scoliosis, the Milwaukee brace is an example of which type of orthosis:
   A. 3 point fixation
   B. distraction
   C. fluid compression
   D. sleeve
   E. skeletal fixation
   ***B***
Physiotherapy

6. The exchange of heat between a surface and a fluid moving past the surface is called:
   a. conversion
   b. conduction
   c. convection
   d. radiation
   e. condensation

7. Identify the treatment that would make a muscle weak or force it into relaxation:
   a. microwave diathermy
   b. traction
   c. infrared
   d. pulsed sinusoidal current:

8. When applying ultrasound to any extremity, such as the foot, the part must be immersed in water because:
   a. water is a better transfer media
   b. when applied over an uneven surface, ultrasound may be absorbed more easily by the body prominences and overheat them:
   c. water will allow ultrasound to penetrate more deeply into the tissues
   d. water acts as a method of relaxing the foot muscles allowing the ultrasound to be more effective
   e. the foot should not be immersed in water; ultrasound to the foot should be performed like ultrasound to the trunk or gluteals

9. What is the effect of “making or breaking” a galvanic current:
   a. muscle will contract
   b. a blister is formed
   c. hyperemia develops
   d. blanching is present
   e. no effect

10. When applying cervical traction:
    a. use over 80 pounds of traction
    b. pull mostly with the chin strap
    c. pull mostly with the occipital strap
    d. one must always strap down the legs
    e. never adjust in traction

11. Which of the following substances would be used with negative iontophoresis:
    a. potassium
    b. iodine
    c. copper
    d. sodium
    e. zinc

12. Which of the following is the media used for transfer of galvanic or sinusoidal currents?
    a. cream or lotion
    b. air
    c. special electrical gel such as for electromyography
    d. water
    e. solution of magnesium sulfate

13. Which of the following choices offers the best rule of thumb for exposure with close contact to a surface in localized heating?
    a. 115 F for 45 minutes
    b. 55 C for 45 minutes
    c. 125 F for 30 minutes
    d. 30 C for 30 minutes
    e. 45 C for 30 minutes

14. The most commonly useful range of ultrasound is:
    a. 5.0-10.0 watts/cm
    b. 0.5-2.0 watts/cm
    c. 0.1-0.5 watts/cm
    d. over 10.0 volts/cm.
    e. 0.5-1.5 volts/cm.

15. Which body tissue absorbs ultrasound most readily:
    a. skin
    b. bone
    c. muscle
    d. fat
    e. glandular

16. Diathermy works primarily by causing:
    a. vasoconstriction of blood vessels
    b. micromassage
    c. depolarization of spastic muscles
    d. expansion of tissue surfaces and planes
    e. chemically changing tissue it passes through

17. Which is a common form of heat therapy:
    a. diathermy
    b. + galvanism
    c. sinusoidal current
    d. petriassage
    e. ultraviolet

18. What is the functional response of the human body to positive galvanism-the positive pole?
    a. causes hyperemia
    b. increases oxygen content
    c. causes bleeding
    d. causes sedation
    e. softens scar tissue

19. Ultrasound may penetrate tissues as far as:
    a. 1/2 inch
    b. 10 mm
    c. 1-10 mm
    d. 2 inches
    e. 3/4-1 inch

20. Galvanism has its most direct effect upon what part of man’s anatomy:
    a. muscle
    b. bone
    c. nerve
    d. fat
    e. blood vessel

21. Microwave energy is similar to the electromagnetic waves of:
    a. radio
    b. radar
    c. hertzian wave
    d. television
    e. gamma rays

22. Which of the following pairs are not similar?
    a. galvanism and sinusoidal current
    b. short-wave diathermy and microwave diathermy
    c. infrared and ultraviolet
    d. hot packs and cold packs
    e. ultrasound and active exercise

23. The velocity of peripheral nerve conduction is decreased m/sec/degree centigrade of cooling:
    a. 10.0
    b. 5.5
    c. 2.4
    d. 0.5

24. In cryotherapy, the decreased tendency for edema formation and lymph production is from:
    a. vasoconstriction
    b. vasodilation
    c. vasodepression
    d. vasospasm

25. When heat is applied to a nerve, the conductivity of the nerve is:
    a. abolished
    b. decreased
    c. increased
    d. not affected
    e. dampened
Physiotherapy

32. Which is not a contraindication for diathermy:
   a. bursitis
   b. non-draining abscess
   c. a condition where there is a tendency to hemorrhage
   d. pregnancy
   e. peptic ulcer

33. Which of the following is a contraindication to ultrasound?
   a. osteoarthritis
   b. tennis elbow
   c. anesthesia
   d. fibrosis
   e. sinusitis

34. Almost any acute condition requires all but one of the following:
   a. rest for the part
   b. cold applications
   c. diathermy
   d. restriction of motion
   e. follow-up care

35. Active exercise is contraindicated in:
   a. chronic bursitis
   b. a chronic muscle strain
   c. cases of possible hemorrhage
   d. recovery stage of myocardial infarct
   e. pregnancy

36. Massage is contraindicated over:
   a. hypertrophied heart
   b. peptic ulcer
   c. muscle strain
   d. colon in constipated cases
   e. distended, but not inflamed veins

37. One of the most important contraindications to lumbar traction is:
   a. size of the patient; if too large
   b. hyperlordosis of the lumbar spine
   c. chronic muscle spasm
   d. osteoporosis, especially of the ribs
   e. hypomobility of the lumbar spine

38. Which of the following physiotherapy machines might be best used for carbuncles, bounds and infected ulcers?
   a. ultraviolet radiation
   b. ultrasound
   c. diathermy
   d. galvanism
   e. infrared

39. Traction is contraindicated in which of the following conditions?
   a. hypertension
   b. degenerative joint disease of the spine
   c. spinal headaches
   d. muscle spasm
   e. hyperlordosis of the lumbar spine

40. The use of which modality is best suited for relieving lung congestion:
   a. hot moist packs
   b. ultrasound
   c. infrared
   d. diathermy
   e. any form of dry heat

41. In which of the following conditions would localized heating be contraindicated:
   a. Quincke’s disease
   b. Hirshbrung’s disease
   c. Lesch-Nyhan Syndrome
   d. Von Economo’s disease
   e. Von Recklinghausen’s disease

42. Which of the following would be a detrimental effect of local heating:
   a. neutrophilic infiltration
   b. increased phagocytic activity
   c. convective dissipation
   d. noninflammatory edema formation
   e. increased pulmonary output

43. Which of the following is the method by which the blood vascular system dissipates heat?
   a. conduction
   b. convection
   c. radiation
   d. condensation
   e. convection

44. Which of the following is not a contraindication for:
   a. hypertension
   b. evidence of cord pressure
   c. to stimulate the proprioceptive mechanism
   d. malignancy
   e. pregnancy

45. Indications for local cooling include:
   a. extravasation of blood and lymph
   b. reduced pain
   c. reduced spasticity
   d. reduced viability

46. Cervical traction is not indicated in:
   a. arthritic conditions
   b. cervical disc injuries
   c. heart disease
   d. migraine headaches
   e. whiplash

47. Radiculitis might best be treated with:
   a. diathermy
   b. + galvanism
   c. hot moist packs
   d. - galvanism
   e. passive exercise

48. Which of the following is not a physiologic effect of local heating:
   a. increased capillary hydrostatic pressure
   b. increased capillary blood flow
   c. decreased phagocytosis
   d. increased local metabolic rate
   e. ultraviolet therapy

49. Which of the following is the method by which the blood vascular system dissipates heat:
   a. iontophoresis
   b. infrared
   c. ultrasound
   d. diathermy
   e. petrissage

50. One of the most effective methods for treating fractures combines both heat and massage: which modality would do the best job?
   a. diathermy
   b. whirlpool bath
   c. diathermy
   d. traction
   e. petrissage

51. Which of the following conditions might best be treated with ultrasound?
   a. osteoarthritis
   b. tennis elbow
   c. chronic muscle strain
   d. chronic bursitis
   e. any form of dry heat

52. Which of the following is not a contraindication to using an open wound:
   a. used internally
   b. used to stop bleeding
   c. used to stop infection
   d. used over inflamed veins
   e. always used on an open wound

53. Which of the following is a contraindication for relief of whiplash:
   a. diathermy
   b. + galvanism
   c. + galvanism
   d. traction
   e. passive exercise

54. In which of the following conditions would diathermy be contraindicated:
   a. Quincke’s disease
   b. Hirshbrung’s disease
   c. Lesch-Nyhan Syndrome
   d. Von Economo’s disease
   e. Von Recklinghausen’s disease

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   d. muscle spasm
   e. hyperlordosis of the lumbar spine

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   c. chronic muscle strain
   d. chronic bursitis
   e. any form of dry heat

62. Which of the following is not a contraindication to using an open wound:
   a. used internally
   b. used to stop bleeding
   c. used to stop infection
   d. used over inflamed veins
   e. always used on an open wound

63. Which of the following is a contraindication for relief of whiplash:
   a. diathermy
   b. + galvanism
   c. + galvanism
   d. traction
   e. passive exercise

64. In which of the following conditions would diathermy be contraindicated:
   a. Quincke’s disease
   b. Hirshbrung’s disease
   c. Lesch-Nyhan Syndrome
   d. Von Economo’s disease
   e. Von Recklinghausen’s disease

65. Traction is contraindicated in which of the following conditions:
   a. hypertension
   b. degenerative joint disease of the spine
   c. spinal headaches
   d. muscle spasm
   e. hyperlordosis of the lumbar spine

66. The use of which modality is best suited for relieving lung congestion:
   a. hot moist packs
   b. ultrasound
   c. infrared
   d. diathermy
   e. any form of dry heat

67. Which of the following would be a detrimental effect of local heating:
   a. neutrophilic infiltration
   b. increased phagocytic activity
   c. convective dissipation
   d. noninflammatory edema formation
   e. increased pulmonary output

68. Which of the following is the method by which the blood vascular system dissipates heat:
   a. conduction
   b. convection
   c. radiation
   d. condensation
   e. convection

69. Which of the following is not a contraindication for:
   a. hypertension
   b. evidence of cord pressure
   c. to stimulate the proprioceptive mechanism
   d. malignancy
   e. pregnancy

70. Indications for local cooling include:
   a. extravasation of blood and lymph
   b. reduced pain
   c. reduced spasticity
   d. reduced viability
   e. petrissage
52. Low back traction is best applied over a range of:
   a. 10-40 pounds  
   b. 60-120 pounds  
   c. 120-240 pounds  
   d. 40-50 pounds  
   e. over 200 pounds
53. Cervical traction should be applied within a range of:
   a. 20-50 Lbs.  
   b. 0-20 Lbs.  
   c. 70-80 Lbs.  
   d. over 60 Lbs.  
   e. 40-120 Lbs.
54. Heat applied to a nerve will:
   a. produce muscle contractions in muscle innervated by the nerve  
   b. increase conductivity  
   c. under any circumstances  
   d. cause momentary loss of conductivity  
   e. only once
55. Which of the following statements concerning braces is true:
   a. a brace may be kept on as long as it is comfortable  
   b. braces should only be used in accident cases  
   c. a brace only no longer than necessary to prevent muscle weakness and atrophy  
   d. a brace should limit all motions of a part  
   e. a brace is seldom helpful in severe ligamentous damage
56. Which disease state is not benefited by electrical stimulations:
   a. stroke  
   b. multiple sclerosis  
   c. cord damage  
   d. parkinsonism  
   e. poliomyelitis
57. Which of the following would least likely be used for treatment of a stroke:
   a. infrared  
   b. sinusoidal current  
   c. ultrasound  
   d. passive exercises  
   e. active exercises
58. The use of passive exercise is beneficial in all but which of the following:
   a. bursitis  
   b. myofascitis  
   c. paralysis from CNS lesion  
   d. acute exacerbation of rheumatoid arthritis  
   e. chronic recurrent stiffness of osteoarthritis
59. One goes from cold to hot in the treatment of:
   a. sprains to strains  
   b. acute disorders to chronic disorders  
   c. muscle spasm to muscle atonia  
   d. muscle pulls to shoulder separations  
   e. abscess formation to prevent formation of scar tissue
60. Massage should always be done:
   a. without regard to patient tolerance  
   b. toward the heart if on the extremity  
   c. under any circumstances  
   d. with increasing pressure  
   e. only once
61. Metal implants are a contraindication in which of the following treatments:
   a. diathermy  
   b. galvanism  
   c. sinusoidal currents  
   d. light therapy  
   e. ultrasound
62. Fungal infections react best to which modality:
   a. diathermy (microwave)  
   b. diathermy (short wave)  
   c. infrared  
   d. ultraviolet  
   e. polarizing effects
63. The range of motion for the elbow in flexion/extension is:
   a. 10 flexion 100 extension  
   b. 180 flexion 30 extension  
   c. 104 flexion 15 extension  
   d. 10 flexion 180 extension  
   e. 20 flexion 90 extension
64. Which of the following is not one of the six basic determinants of locomotion:
   a. pelvic rotation and lateral tilting  
   b. lateral displacement of the pelvis  
   c. knee ankle interaction  
   d. knee flexion and hip flexion  
   e. an increase in the accommodation curves
65. How many tiles during a complete step cycle does the knee reach its maximal extension?
   a. 1  
   b. 2  
   c. 3  
   d. never  
   e. none of the above
66. In normal walking, approximately does the pelvis rotate?
   a. 2  
   b. 12  
   c. 8  
   d. 1  
   e. 20
67. Where is the center of gravity in an adult?
   a. just anterior to the second molar  
   b. just posterior to the seventh dorsal vertebra  
   c. just anterior to the fourth lumbar vertebra  
   d. just posterior to the second sacral vertebra  
   e. just anterior to the second sacral vertebra
68. There are four categories of braces:
   Which of the following is not one of those categorized?
   a. supportive  
   b. corrective  
   c. protective  
   d. limitive  
   e. dynamic
69. A motor unit disease includes those conditions affecting all but which of the following:
   a. anterior horn cell  
   b. anterior horn cell axon  
   c. posterior horn cell  
   d. the myoneural junction  
   e. muscle fibers
70. Conditions which regress to complete or nearly complete recovery are considered to be transient. Which of the following is in this category?
   a. amyotrophic lateral sclerosis  
   b. myasthenia gravis  
   c. muscular dystrophy  
   d. acute anterior poliomyelitis
71. A chiropractor would treat amyotrophic lateral sclerosis in which of the following ways?
   a. ultrasound  
   b. manipulation  
   c. trigger points  
   d. advising therapeutic exercise  
   e. all of the above
72. What is believed to be the cause of muscular dystrophy?
   a. a sex linked recessive gene  
   b. a sex linked dominant gene  
   c. brain damage  
   d. traumatic change to the myoneural junction  
   e. the end result of a chronic infectious disease affecting striated muscle
73. What is the major cause of lumbar scoliosis?
   a. tight abdominal muscles  
   b. high heels  
   c. obesity  
   d. disc damage  
   e. thoracic gibbus
74. A person having a straight lumbar spine would be helped by:
   a. higher heels  
   b. arch supports  
   c. earth shoes  
   d. sandals
75. A patient with a pronounced lumbar scoliosis would be helped by:
   a. arch supports  
   b. higher heels  
   c. earth shoes  
   d. Milwaukee brace  
   e. extension exercises
76. In successful extremity manipulation, which of the following is the better procedure:
   a. evaluate the spine, adjust if necessary, adjust the musculature  
   b. adjust only the spine and balance the musculature  
   c. adjust the extremity and balance the musculature  
   d. adjust only the spine and balance the musculature  
   e. adjust the extremity and adjust the spine at a later date
77. A patient with osteoporosis might be helped by treatment with:
   a. Kinney sacks  
   b. ultrasound  
   c. ultraviolet  
   d. hydrocollator  
   e. silical gel packs
## Physiotherapy

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the approximate range of cervical rotation?</td>
<td>a. 45-90, b. 10-45, C. 80-110, d. 30-70, e. 20-40</td>
<td>C.</td>
</tr>
<tr>
<td>The range of extension and flexion of the cervical column (in order) is:</td>
<td>a. 45-55, b. 10-180, C. 0-90, d. 90-40, e. 20-90</td>
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<td>The degree of lateral bending of the trunk is:</td>
<td>a. 35, b. 60, c. 10, d. 20, e. 90</td>
<td>e.</td>
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<td>The normal range of motion in the knee joint is:</td>
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<td>In inversion, the normal ankle will have a range of motion of approximately:</td>
<td>a. 70, b. 80, c. 30, d. 40, e. 10</td>
<td>c.</td>
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<td>Which of the following is not a method of spinal traction:</td>
<td>a. othath, b. anatomotor, c. Tong table, d. spinatalor, e. Nichas table</td>
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<td>The preferred therapy for chronic adhesive bursitis is</td>
<td>a. positive galvanism with zinc sulphate, b. negative galvanism with potassium iodide, c. diathermy, d. sine wave, e. ultrasound</td>
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<td>Diathermy would be generally contraindicated in</td>
<td>a. acute cervical sprain, b. viral pneumonitis, c. gluteal myofibrosis, d. spastic colitis, e. chronic sinusitis</td>
<td>b.</td>
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<td>The most effective method of removing calcium deposits from a joint bursa is:</td>
<td>a. infrared heat, b. moist heat, C. ultrasound, d. rest, e. diathermy</td>
<td>d.</td>
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<td>In eversion, the normal range of motion in the ankle would be approximately:</td>
<td>a. 5, b. 15, c. 300, d. 40, e. 25</td>
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<td>In rheumatoid spondylitis, the objective of the therapeutic exercise program is to:</td>
<td>a. maintain mobility, b. maintain spine in an erect position, c. maintain power in the para-articular musculature, d. increase osteoclastic production, e. prevent fractures</td>
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Physiotherapy

105. The following therapy is not electrotherapy:
   a. short wave diathermy
   b. galvanism
   c. microwave therapy
   d. sinusoidal current
   e. whirlpool bath

107. The crystal in the ultrasonic head is:
   a. quartz
   b. zinc
   c. copper
   d. tile
   e. iron

108. In treating tennis elbow with ultrasound, you would treat:
   a. only the elbow
   b. only the nerve roots
   c. both areas
   d. with copper sulfate
   e. no: treat this condition

109. In the use of diapulse therapy we also treat the:
   a. ear
   b. kidney
   c. adrenal gland
   d. thyroid gland
   e. nerve roots

110. Over an abrasion in a patient's skin, the galvanic current will:
   a. diminish
   b. spread out
   C. remain the same
   d. increase in strength
   e. become faradic current

111. Clinically, a small dosage of ultrasound is:
   a. 1 to 1.5 watts
   b. .3 to 1 watt
   c. 3 to 4 watts
   d. 2 to 6 watts
   e. .5 to 1.5 watts per square centimeter

112. Microwaves produce electric energy about:
   a. 27 megacycles
   b. 1 megacycle
   c. 2450 megacycles
   d. 70 megacycles
   e. 67,345 megacycles

113. The current best adapted to ion transfer is:
   a. a smooth current
   b. a strong current
   c. a weak current
   d. a fast current
   e. a faradic current

114. Ultrasound should not be applied to the:
   a. uterus
   b. arm
   c. amputated limb
   d. chest
   e. scar

115. Ultrasound therapy is contraindicated in:
   a. tennis elbow
   b. bursitis
   c. osteoarthritis
   d. sinusitis
   e. sinusitis

116. The butterfly electrode is used to treat:
   a. sinusitis
   b. bursitis
   c. diabetes
   d. fractures
   e. vascular conditions

117. Prolonged application of cold will:
   a. hasten healing
   b. retard healing
   c. have no affect
   d. increase vascular tissue
   e. cause scars

118. The coplanar technic is used in:
   a. ultrasonic therapy
   b. ultraviolet
   c. infrared therapy
   d. sitz baths
   e. diathermy

119. A hydrogalvanic bath usually employs a solution called:
   a. copper sulfate
   b. histamine
   c. peroxide
   d. tecasol
   e. saline

120. The electrode pads for galvanic therapy should be kept in:
   a. water
   b. dry air
   c. saline solution
   d. peroxide
   e. copper sulfate solution

121. In anemias, ultraviolet:
   a. increases red cell production
   b. decreases red cell production
   c. produces deformed cells
   d. has no affect on red cells
   e. ruptures the red cells

122. Hydrocollator steam packs contain:
   a. copper sulfate
   b. histamine
   c. silica gel
   d. mineral oil
   e. saline

123. In galvanic therapy, the positive pole does not:
   a. attract oxygen
   b. harden scar tissue
   c. stop bleeding
   d. have a sedative effect
   e. act as a vasodilator

124. Rapid sinusoidal current alternates at:
   a. 40 to 60 cycles per second
   b. 5 to 9 cycles per second
   c. 5 to 30 cycles per second
   d. 50 to 100 cycles per second
   e. 1 cycle per second

125. The introduction of a drug into deeper layers of the skin by galvanic current is:
   a. iontophoresis
   b. cataphoresis
   c. diathermy
   d. formation
   e. sinusoidal therapy

126. The dosage rule for galvanism is:
   a. 2 watts per square inch of electrode
   b. one milliamperc per square inch of electrode
   c. 2 watts per centimeter of electrode
   d. 5 milliamperc per square inch of electrode
   e. patient's tolerance

127. Cervical traction is not indicated in:
   a. whiplash
   b. cervical disc injuries
   c. migraine headaches
   d. heart disease
   e. arthritic conditions

128. Quartz instruments should be cleaned with:
   a. peroxide
   b. boiling water
   c. nothing
   d. cotton and alcohol
   e. cold water

129. Ethyl chloride is useful in controlling pain of:
   a. tenesmus
   b. gall stones
   c. ulcers
   d. burns
   e. impetigo

130. In spastic constipation, diathermy is used to:
   a. soften the stool
   b. relax the spasm
   c. warm the abdomen
   d. act as a laxative
   e. give water to the stool

131. Tungsten filament infrared lamps emit:
   a. blue light
   b. orange light
   c. red light
   d. no light
   e. purple light

132. The jolly test using galvanic current is positive for:
   a. ketany
   b. myasthenia gravis
   c. tuberculosis
   d. bursitis
   e. cancer

133. Muscle contractions produced by low voltage can be useful in treating:
   a. myositis
   b. diabetes
   c. carcinoma
   d. fractures
   e. tuberculosis
Physiotherapy

141. The negative pad in 0.0. current therapy should be:
   a. softens tissue
   b. hardens tissue
   c. causes desquamation
   d. produces a scar

142. Underwater exercises are useful in:
   a. backache
   b. acute painful neuritis
   c. burns tissue
   d. erosive joint lesions
   e. acute joint inflammation

143. Chronic osteomyelitis responds best to:
   a. ultrasound
   b. diathermy
   c. ultraviolet
   d. low voltage
   e. diapulse

144. Diathermy is indicated in treating severe contusions after:
   a. 24 hours
   b. 2 hours
   c. 3 days
   d. a week
   e. immediately

145. In ultrasonic therapy, a contact medium must be used:
   a. because the sound wave is dangerous
   b. to prevent infection
   c. because the sound waves cannot pass through air
   d. to hold the transducer in place
   e. to prevent burning

146. In treating painful bruises, the negative pad should be:
   a. over the lesion
   b. the indifferent electrode
   c. dry
   d. on the abdomen
   e. held in the hands

147. In treating boils and carbuncles with ion transfer, we use:
   a. saline
   b. salicylic acid
   c. copper sulfate
   d. iodine
   e. faradic current

148. In treating brachial neuritis, the positive pad should be:
   a. dry
   b. over the wrist
   c. over the elbow
   d. over the clavicular area
   e. any place

149. Ultraviolet is not indicated in diabetes because:
   a. may cause itching
   b. may cause condition to spread
   c. will always cause a burn
   d. the skin is too dry
   e. will affect the insulin balance

150. A sitz bath is best suited to treat:
   a. bruises
   b. Raynaud’s disease
   c. a fracture
   d. nodes
   e. hemorrhoids

151. The following apparatus is not meant for traction therapy:
   a. Hill anatomotor
   b. Buchanan table
   c. ultrasound
   d. cervical harness

152. The frequency of short wave diathermy is about:
   a. 1 megacycle
   b. 27 megacycles
   c. 10 megacycles
   d. 100 megacycles
   e. 5 megacycles

153. In diathermy application, the region of treatment should be free of:
   a. cloth
   b. wooden objects
   c. dust
   d. metal objects
   e. towelling

154. The transforming of electrical energy to mechanical energy in ultrasonic therapy is called the:
   a. sonating affect
   b. radiation
   c. ion transfer
   d. electrotherapy
   e. piezoelectric effect

155. A current that gradually increases to a maximum value and then decreases is:
   a. galvanic current
   b. tetanizing current
   c. surging current
   d. sinusoidal current
   e. pulsating current

156. A denervated muscle will react to electricity with:
   a. a slow, worm-like contraction
   b. a short brisk twitch
   c. no reaction
   d. atrophy
   e. flaccidity

157. In treating neuralgia with galvanic current:
   a. the positive electrode is over the nerve
   b. the negative electrode is over the nerve
   c. the dispersive electrode is over the nerve
   d. saline must be used
   e. three electrodes must be used

158. The unit of infrared wave length measurement is:
   a. dram
   b. foot
   c. wave
   d. Angstrom unit
   e. watt

159. Patient sensitivity to ultraviolet is usually determined by:
   a. a chart
   b. heat
   c. skin test area outlined by paper
   d. electrical sensitivity
   e. patients eye

160. A calcium-phosphorus deficiency would respond best to:
   a. ultraviolet therapy
   b. infrared therapy
   c. ultrasound
   d. low voltage
   e. diathermy

161. The treatment of choice in physiotherapy for singultus is:
   a. ultrasound
   b. traction
   c. rapid sinusoidal current
   d. galvanism
   e. diathermy
Physiotherapy

162. Colonic irrigation is indicated in:
   a. tuberculosis
   b. rectal infections
   c. syphilis
   d. hypertonic colons
   e. diverticulitis (severe)

163. The treatment for acute conjunctivitis for the first 24 hours is:
   a. cold packs
   b. hot packs
   c. dry heat
   d. massage
   e. leave it alone

164. At a frequency of 1000 kilocycles, the effectiveness of ultrasonic energy at a depth of four inches is only:
   a. 80%
   b. 25%
   c. 60 to 180 pounds
   d. 15 to 20 pounds
   e. never does

165. The Kroayer lamp belongs to what therapy:
   a. infrared therapy
   b. diathermy
   c. ultrasonic therapy
   d. heat
   e. ultraviolet therapy

166. A drum electrode is used in:
   a. ultrasonic therapy
   b. diathermy
   c. low voltage
   d. ion transfer
   e. infrared therapy

167. The chief physiological effect of microwave is:
   a. heat
   b. cold
   c. massage
   d. ion transfer
   e. muscle stimulation

168. In iontophoresis, metals or bases are placed at the:
   a. negative pole
   b. positive pole
   c. wrist
   d. dispersive electrode
   e. larger electrode

169. The treatment by physical methods applied to the spinal region is called:
   a. spondylotherapy
   b. diathermy
   c. ion transfer
   d. acceleration
   e. percussion

170. When heat is applied to a nerve the conductivity of the nerve is:
   a. dampened
   b. abolished
   c. increased
   d. not affected
   e. dried out

171. Spinal traction is indicated in:
   a. Pott's disease
   b. spinal carcinoma
   c. osteomyelitis
   d. disc cases
   e. spinal fracture

172. The best therapy for furunculosis of the external meatus is:
   a. ultraviolet
   b. diapulse
   c. ultrasound
   d. cold
   e. diathermy

173. Low back traction is best applied within a range of:
   a. 15 to 28 pounds
   b. 25 to 30 pounds
   c. 60 to 180 pounds
   d. 5 to 10 pounds
   e. over 200 pounds

174. Ultrasonic therapy to the knee involves:
   a. treating only the back of the knee
   b. treating only the front of the knee
   c. treating only the nerve roots
   d. treating from several angles
   e. treating only over the tender area

175. The stellate ganglion should not be sonated in patients with:
   a. broken bones
   b. burns
   c. history of heart disease
   d. severe senility
   e. neurities

176. Diapulse operates at a frequency of about:
   a. 27.12 megacycles
   b. 1 megacycle
   c. 92 megacycles
   d. 150 megacycles
   e. 300 megacycles

177. The range of sound waves audible to the human ear is:
   a. 6 to 10 decibels
   b. 50 to 20,000 cycles per sec.
   c. 8.7 to 1.1 kilocycles per sec.
   d. 2000,000 to 50,000 cycles per sec.

178. The most desirable range of cycles per second for therapeutic applications of ultrasound is:
   a. 0.7 to 1.1 megacycles
   b. 50 to 20,000 cycles
   c. 0.5 to 3 kilocycles
   d. 200,000 to 500,000 cycles

179. The range of depth of penetration of ultrasound in most tissues is:
   a. 4 to 8 inches
   b. 10 to 12 cm.
   c. 4 to 8 cm.
   d. unlimited depth

180. The name of the phenomenon by which mechanical vibrations are produced when electrical charges are applied to a crystal surface is:
   a. Piezoelectric effect
   b. Rheobase
   c. Cavitation
   d. Transduction

181. The waves of rarefaction and condensation in ultrasound are:
   a. longitudinal
   b. transverse
   c. auscultatory
   d. perpendicular

182. The head of the ultrasound unit is called:
   a. Rheobase
   b. Piezograi
   c. Conductrode
   d. Transducer

183. Because ultrasound produces mechanical vibrations, what must be applied to the patient before use of ultrasound:
   a. negative pole
   b. heat
   C. a coupling agent
   d. a conductrode

184. PZT (load-Zirconate-Titanate) crystals are favored over quartz and salt crystals because they:
   a. are less expensive
   b. require less voltage
   c. will not break if dropped
   d. are resistant to heat

185. Pulsed ultrasound minimizes which of the four effects of ultrasound:
   a. thermal
   b. mechanical
   c. chemical
   d. biological

186. Irregular body surfaces are effectively treated with ultrasound by using:
   a. piezoelectric effect
   b. increased voltage
   c. underwater technique
   d. pulsed ultrasound

187. Experimental use of excessively high ultrasound dosages has produced an effect called:
   a. Piezoelectric
   b. cavitation
   c. micromassage
   d. transduction

188. The average intensity of ultrasound in watts per square centimeter used in practice is:
   a. 10 to 20
   b. 1 to 5
   c. 0.7 to 1.1
   d. 0.5 to 2.5

189. The widest field of usefulness of ultrasound therapy is in:
   a. pregnancy
   b. ischemia
   c. Arthritic conditions
190. The ultrasound applicator head should not be held in air for long periods while energized because it will:
   a. become hot
   b. become grounded
   c. polarize the crystals
   d. shock the patient

191. In treating trigger points, using the sound head held steady, the machine should be switched to:
   a. red leads
   b. low voltage
   c. continual sound
   d. pulsed sound

192. Electronic current flows from:
   a. plus to minus
   b. minus to minus
   c. minus to plus
   d. plus to plus

193. A unit of quantity of electricity, which is the amount furnished by a current of one ampere in one second is:
   a. volt
   b. ohm
   c. coulomb
   d. Faraday

194. The unit of strength of electrical current, representing a current having a force of one volt and passing through a conductor with a resistance of one ohm is:
   a. faraday
   b. ampere
   c. coulomb
   d. hertz

195. The electromotive force that will produce a current of one ampere in a circuit which has a resistance of one ohm is:
   a. faraday
   b. volt
   c. coulomb
   d. hertz

196. The unit of electrical resistance is:
   a. Faraday
   b. coulomb
   c. hertz
   d. ohm

197. The voltage necessary to force a current of 10 amps through a resistance of 20 ohms is:
   a. 200 volts
   b. volt
   c. 2 volts
   d. 5 volts

198. The range of wavelength of ultraviolet rays is:
   a. Itol0m
   b. 1 to 10 cm
   c. 1800 to 4000 angstroms
   d. 0.7 to 1.1

199. The range of wavelength of infrared rays is:
   a. I’ to 10 m
   b. ItolOcm
   c. 1800 to 4000 angstroms
   d. 7,000 to 120,000 angstroms

200. When treating geriatrics with diathermy, one must be cautious because elderly people in general do not:
   a. sleep regularly
   b. bathe regularly
   c. maintain their Medicare
   d. maintain their vitamin D intake

201. Pure distilled water is a:
   a. conductor
   b. semi-conductor
   c. non-conductor
   d. conductrode

202. Flaccid paralysis of muscles is characteristic of:
   a. upper water lesions
   b. lower water neuron lesions
   c. hyperactive deep reflexes
   d. decussation failure

203. Reaction to degeneration usually occurs within what period of time after injury:
   a. 10 to 14 hours
   b. 3 to 6 weeks
   c. 10 to 14 days
   d. immediately

204. The point of the muscle which normally is most excitable and represents the location of the greatest concentration of nerve endings is the:
   a. motor point
   b. rheobase
   c. conductrode
   d. RD

205. The minimal strength of an electrical stimulus of indefinite duration that is able to cause excitation of a muscle or nerve is called:
   a. chronaxie
   b. rheobase
   c. conductrode
   d. RD

206. The penetration of ultraviolet rays into the skin is limited to approximately:
   a. 4 to 8 cm
   b. 0.7 to 1.1 cm
   c. 2 in.
   d. 1 mm

207. Patch tests are used to test for sensitivity before the use of:
   a. ultrasound
   b. ultraviolet
   c. diathermy
   d. diapulse

208. The recommended conductive heating device is:
   a. electric heating pad
   b. hot water bottle
   c. wet hot packs
   d. electric hot water bottle

209. One must always cover the area of the patient to be treated with towels or sponges to absorb perspiration when treating with:
   a. diathermy
   b. ultrasound
   c. ultraviolet
   d. chronaxie

210. A modification of a potentiometer which controls resistance is a:
   a. rheobase
   b. rheostat
   c. conductrode
   d. chronaxie

211. A form of A.C. which consists of two pulses immediately following each other, in different direction, one of high intensity and short duration and the other of low intensity and long duration is:
   a. galvanic current
   b. faradic current
   c. continuous current
   d. phoresis

212. The important effect of cryotherapy is:
   a. increased metabolism
   b. vasodilation
   c. vasoconstriction
   d. vasodistribution

213. With extremely rapid cooling, there will be periodic bursts of:
   a. vasodistribution
   b. vasoconstriction
   c. vasodilation
   d. angiotension

214. To reduce extravasation of blood and fluid after trauma, one would apply:
   a. cold
   b. heat
   c. diathermy
   d. ultrasound

215. The depth of penetration into the skin of infrared waves is approximately:
   a. 3 in.
   b. 6 cm.
   c. 8 mm.
   d. 2 mm.

216. Various points in the course of a nerve, pressure upon which is painful in cases of neuralgia, are called:
   a. pseudomonas
   b. Erb’s points
   c. Valloix’s points
   d. Troussseau’s points

217. CCC - ACC - COC I representative of:
   a. Pfluger’s law
   b. Erb’s law
   c. Neumann’s law
   d. Ohm’s law

218. In bipolar application of galvanic current, the two electrodes are:
   a. different sizes, close together
   b. same size, close together
   c. same size, same distance apart
   d. different size, same distance apart
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227. Indicate the contraindications for short-wave diathermy listed below:
   a. tenosynovitis
   b. sprains
   c. closed suppurative abscess
   d. chronic bursitis
   e. sinusitis

228. The standard unit of measuring wave length of the electromagnetic spectrum is:
   a. milliampere
   b. solar system
   c. kilovolt
   d. anstrom unit
   e. decibel

229. Placing shortwave diathermy pad electrodes of equal size opposite and parallel is designated as:
   a. co-plano application
   b. cuff application
   c. longitudinal application
   d. semi-cuff application
   e. transverse application

230. The flow of an electrical force of shortwave diathermy through the insulating or dielectric medium is known as:
   a. conductive current
   b. capacitative current
   c. neither
   d. both

231. In the human body, what tissues conduct shortwave diathermy currents most effectively:
   a. muscle
   b. tendons
   c. fasciae
   d. fat
   e. bone

232. One of the following is not a secondary physiological effect of shortwave diathermy:
   a. hyperemic
   b. attenuation of bacteria
   c. increased metabolism
   d. polarity effects
   e. sedation

233. One of the following is not considered a current of low frequency:
   a. interrupted galvanic
   b. slow sinusoidal
   c. faradic
   d. microwave diathermy
   e. rapid sinusoidal

234. One of the following aggravates the condition with shortwave diathermy:
   a. bursitis
   b. hypertrophic arthritis
   c. tenosynovitis
   d. acute rheumatoid arthritis
   e. adhesive capsulitis

235. Why is shortwave diathermy applied directly over the lesion, contraindicated in arteriosclerosis obliterator and thromboangitis obliterans:
   a. due to an area of ischemia producing a burn or gangrene
   b. structures involved cannot be reached due to the depth within the tissues of the body
   c. the thermal effects cause ionic changes due to their rapid oscillations
   d. increased pigmentation
   e. there is no increased blood flow through the part

236. Diathermy is indicated in treating severe contusions after:
   a. 24 hours
   b. a week
   c. 2 days
   d. 3 days
   e. immediately

237. In microwave therapy, the director is placed from the part a distance of:
   a. 24 inches
   b. 36 inches
   c. 1 to 6 inches
   d. 15 inches
   e. 4 feet

238. The chief physiological effect of microwave:
   a. heat
   b. cold
   c. massage
   d. ion transfer
   e. muscle stimulation

239. The art of massage includes a manual application of superficial stroking. Which of the following corresponds to this procedure:
   a. tapotement
   b. effleurage
   c. petrissage
   d. none
   e. all

240. One of the following is not an indication for cervical traction:
   a. to stretch muscles and ligaments
   b. to widen disc spaces that have been narrowed by disc degeneration
   c. malignant diseases, metastatic or local
   d. to separate vertebral bodies
   e. to stretch and separate epiphyseal joints

241. The standard unit of measuring wave length of the electromagnetic spectrum is:
   a. milliampere
   b. kilovolt
   c. anstrom unit
   d. solar system
   e. decibel

242. Passive exercise is indicated in the following:
   a. fibrous ankylosis
   b. contractures
   c. muscular paresis
   d. all of them
   e. none of them

243. In the use of diapulse therapy, we also treat the:
   a. ear
   b. kidney
   c. adrenal gland
   d. thyroid gland
   e. nerve roots

244. One of the following is not a component of a diode tube:
   a. plate
   b. filament
   c. grid
   d. filament prong
   e. glass envelope

245. In catalelectrotonus, a direct current on a nerve produces:
   a. an increase of irritability at the negative pole
   b. a decrease of irritability at the positive pole
   c. an increase of irritability at the positive pole
   d. a decrease of irritability at the negative pole
   e. none of them
246. In partial reaction of degeneration of a nerve, one of the following is not correct: a. the nerve shows a decrease of both faradic and galvanic response  
b. the nerve does not respond to either faradic or galvanic stimulation  
c. the response is slow, but this is not as pronounced as in full RD  
d. there may be longitudinal reaction and inversion of polar formula  
e. a decrease of faradic excitability

247. The shifting of water content of the tissues through a membrane structure with an electrical charge is designated as:  
a. electroosmosis  
b. dialysis  
c. electrotonus  
d. cataphoresis  
e. myasthenia reaction

248. Anion is an ion carrying a:  
a. positive charge  
b. negative charge  
c. neutral charge  
d. dielectric charge  
e. none of these

249. A constant current flowing in one direction is called:  
a. alternating current  
b. direct current  
c. faradic current  
d. static current  
e. high frequency current

250. One of the following reactions listed is not a polarity effect of positive galvanism:  
a. acid  
b. vasoconstriction  
c. stimulating  
d. dehydrates tissue  
e. attracts oxygen

251. When a direct current passes between two electrodes immersed in an electrolytic solution, the following occurs:  
a. positive ions will be attracted to the negative pole  
b. negative ions will be attracted to the positive pole  
c. neither  
d. both

252. Dosage of application for the galvanic current must always be within comfortable toleration, but as an average the normal skin tolerates what amount of milli-amperes per square inch of ad electrode:  
a. 1/2 to 1  
b. 3 to 4  
c. 5 to 6  
d. 7 to 8  
e. 9 to 10

253. Application from the positive pole of the galvanic current for the following is correct except:  
a. copper is employed in the treatment of endocervicitis  
b. zinc is the best antiseptic of the caustic ions  
c. the free ions of copper and zinc produce an insoluble precipitate  
d. d the result is a local germicidal effect with zinc or copper  
e. with zinc and copper, there is liquefication of protein

254. The following effects of current electricity listed below are all correct except:  
a. all forms of current produce thermal and electromagnetic effects  
b. chemical action is mainly produced by the direct current  
c. changes in direction of flow in the alternating current interfere with the regular movement of ions upon which chemical actions are used  
d. currents of very rapid alternations (high frequency currents) exert no chemical action at all  
e. high frequency currents produce muscle stimulation in the form of contractions

255. In the treatment of uncomplicated chronic middle ear suppuration especially with large tympanic perforation, which of the following solutions are used in iontophoresis:  
a. 2% copper sulphate  
b. 2% zinc sulphate  
c. acetamine  
d. 1 calcium chloride  
e. 2 sodium chloride

256. Static electricity utilizes the following averages:  
a. 5 MA  
b. 50 MA  
c. 75 MA  
d. 25 MA  
e. less than 1 MA

257. With application from the positive pole of the galvanic generator, the use of heavy metals such as copper and zinc differ from the action of medicinal ions by:  
a. instead of a soluble molecule which is absorbed by the tissue, the gree ions of copper and zinc produce an insoluble protein  
b. the opposite effect as explained in A  
c. both  
d. neither

258. The dosage rule for galvanism is:  
a. 2 watts per square inch of electrode  
b. 1 milliampere per square inch of electrode  
c. 2 watts per square centimeter of electrode  
d. 5 milliampere per square inch of electrode  
e. patient’s tolerance

259. In ion transfer therapy, the following substance is used at the negative pole:  
a. potassium  
b. mercury  
c. sulphate  
d. histamine  
e. iodine

260. The deeper destruction of tissues by high frequency bitroical currents is:  
a. electrotomy  
b. radiation  
c. burning  
d. electrodesiccation  
e. electrocoagulation

261. Thyroid conditions treated with ion transfer therapy will receive:  
a. copper sulphate  
b. sodium chloride  
c. zinc sulphate  
d. iodine  
e. histamine

262. Bell’s palsy responds best to ion transfer treatment when we use:  
a. copper sulphate  
b. histamine  
c. silver nitrate  
d. saline  
e. sodium chloride

263. Ultrasound upon tissue produces the following effects, except:  
a. produces a powerful and deep micromassage  
b. causes exudates and precipitates to be absorbed and tissue deposits to be broken up  
c. relieves edema  
d. increases hypertonicity of muscle  
e. produces a local analgesia causing relief of pain

264. Which is associated with ultrasound:  
a. photochemical  
b. kinetic  
c. piezo-chemical  
d. piezo-electrical  
e. dielectric conductivity

265. The word “cavitation” is most likely associated with which of the following:  
a. shortwave diathermy  
b. sinusoidal  
c. microwave  
d. ultraviolet  
e. ultrasound

266. Ultrasound therapy is associated with one of the following:  
a. capacitance  
b. resistance  
c. reactance  
d. low frequency  
e. rarefaction and condensations

267. The average ultrasonic generator for general practice utilizes the following cycles per second:  
a. 2,000,000  
b. 3,000,000  
c. 10,000  
d. 800,000  
e. 10,000,000

268. Ultrasonic dosage is measured as follows:  
a. watts per square cm.  
b. percentage of power  
c. angstrom units  
d. ultraviolet  
e. hydrotherapy

269. A transducer head is associated with what unit of physiotherapy:  
a. shortwave diathermy  
b. microwave diathermy  
c. ultrasound  
d. ultraviolet  
e. hydrotherapy
270. Clinically, a small dosage of ultrasound is:
   a. 1 to 1.5 watts  
   b. .5 to 1 watt  
   c. 3 to 4 watts  
   d. 2 to 6 watts  
   e. .5 to 1.5 watts per centimeter

271. Projecting ultrasound into tissue and listening for its echo is:
   a. radiation  
   b. sonation  
   C. ionization  
   d. ultrasonoscopy  
   e. desquamation

272. Ultrasonic energy is:
   a. homogenously absorbed  
   b. not absorbed  
   c. radiated  
   d. slightly absorbed  
   e. not homogenously absorbed

273. With ultrasound in a water bath, we usually can:
   a. decrease wattage  
   b. increase wattage  
   c. heat the water  
   d. leave the wattage the same  
   e. use dermamassage.

274. An ultrasonic applicator with a radiating area of six square centimeters and a total output of 15 watts has an average intensity of:
   a. 5 watts per square cm.  
   b. 2.5 watts per square  
   c. 10 watts per square cm.  
   d. 20 watts per square  
   e. 100 watts per square cm.

275. The mechanical effect of ultrasound is said to be one of:
   a. micromassage  
   b. heating  
   c. vibrating  
   d. radiation  
   e. absorbed energy

276. The best safeguard in the use of ultrasound is:
   a. itching  
   b. hypcromia  
   c. coldness  
   d. patient’s complaint of pain  
   e. muscle reaction

277. The ultrasonic application in osteoarthritis of the hip joint involves the treatment of:
   a. one area  
   b. three areas  
   c. five areas  
   d. only the hip  
   e. only the nerve root

278. The transforming off electrical energy to mechanical energy in ultrasonic therapy is called the:
   a. sonating effect  
   b. radiation  
   c. ion transfer  
   d. electrotherapy  
   e. piezoelectric effect

279. At a frequency of 1000 kilocycles, the effectiveness of ultrasonic energy at a depth of four inches is only:
   a. 80  
   b. 25  
   c. 100%  
   d. never does

280. One of the following is not a biological effect of ultraviolet:
   a. pigmentation  
   b. anti-rachitic  
   c. bacteridial  
   d. metabolic effect  
   e. liquifactive effect

281. The totality of the visible spectrum may be separated by prisms or suitable filters into different wave lengths representing different colors. The following are of the matching type. Select the item from Column II that is most appropriate to the item in Column I:
   a. yellow  
   b. green  
   c. red  
   d. violet  
   e. orange  
   f. blue  
   g. f.5300 to 7800 AU

282. All except one listed below is questionable regarding ultraviolet therapy:
   a. blood sugar of the normal person is not influenced  
   b. influence thyroid activity  
   c. irradiation may double the fat content of the blood  
   d. ultraviolet rays exert a glycogen-storing effect  
   e. irradiation

283. The bactericidal effects of wave lengths of ultraviolet showed maximal effects in a zone midway between which of the following:
   a. 1000 to 2000 AU  
   b. 3000 to 4000 AU  
   c. 2000 to 3000 AU  
   d. 4000 to 5000 AU  
   e. 6000 to 7000 AU

284. Bactericidal effects on the tissues of the human body by ultraviolet are limited by the penetration of ultraviolet restricted to the uppermost layers of the skin. What is this depth:
   a. 2 mm  
   b. 3 mm  
   c. 4 mm  
   d. 5 mm  
   e. 6 mm

285. One of the following is considered a contraindication to ultraviolet irradiation:
   a. infantile tetany  
   b. bronchial asthma  
   c. adenoma sebaecum  
   d. pityriasis rosea  
   e. active and progressive forms of pulmonary tuberculosis

286. A patient will receive optimum infrared rays if the source is at:
   a. a 65 degree angle to the irradiated surface  
   b. a 60 degree angle to the irradiated surface  
   c. a 65 degree angle to the irradiated surface  
   d. a 60 degree angle to the irradiated surface  
   e. a 60 degree angle to the irradiated surface

287. The following is not classified as a high frequency treatment method:
   a. short wave diathermy  
   b. electrodesiccation  
   c. electrocoagulation  
   d. sinusoidal current  
   e. electrocautery

288. One of the following is incorrect:
   a. chronaxie of a healthy nerve is about 1/50 sec.  
   b. chronaxie of a degenerated muscle is about 1/50 sec.  
   c. it would be useless to apply a faradic stimulus with its time duration of 1/100 sec. to excite a paralyzed muscle with a chronaxie of 1/50 sec.  
   d. a quick chronaxie of a healthy muscular mechanism requires a slow make and break to secure maximum effect.

289. Muscles in the stage of flaccid paralysis react as follows, except:
   a. responds only to a very slow rate of stimulation  
   b. rate of stimulation being 10-20 per minute  
   c. the contraction is sluggish and vermicular  
   d. rough stimulus, such as quick galvanic current is the current off choice  
   e. a slow smooth galvanic current produces a stimulus o long duration to which paralyzed muscles respond gently and painlessly

290. The most important field for physical therapy lies in the treatment of:
   a. acute disease  
   b. acute infection  
   c. contagious disease  
   d. chronic disease  
   e. acute traumatization

291. What is the unit of power o ultrasound;
   a. amperes  
   b. ohms  
   c. watts per square centimeter  
   d. watts per square millimeter  
   e. volts per square centimeter

292. Galvanic and sinusoidal currents are known respectively as:
   a. short wave frequencies  
   b. faradic and square wave  
   c. alternating and pulsed  
   d. alternating current and direct current  
   e. direct current and alternating current

293. The action of high frequency current upon quartz crystal is the following effect:
   a. rheobase  
   b. photothermal  
   c. piezo electric  
   d. photochemical  
   e. electrochemical

294. In a water system pressure is to rate of flow as an electrical system voltage is to:
   a. current  
   b. wattage  
   c. power  
   d. ohms  
   e. amperage

295. An ohm may be defined as a measure of:
   a. electric current  
   b. electrical voltage  
   c. electrical resistance  
   d. capacitance  
   e. electrical conductants
295. Electrical or galvanic current is best defined as:
   a. cyclic flow of electrons
   b. unidirectional flow of electrons
   c. bidirectional flow of electrons
d. current that travels evenly
e. current that goes the shortest distance between two points

297. The inverse square law states:
a. the square of the law is. less than its length
b. intensity increases with the square of the distance
c. the more you make the less you have
d. the opposite off the reverse square law
e. the sum of the squares equals the difference in the square roots

298. J.H. Van Hoff’s Law states:
a. the tolerance of skin to ultra violet is greater than mucous membrane
b. a nerve will be stimulated by cold
c. for every 20 degree rise in temperature oxidation is increased 2 times
d. the oxidation is reduced in direct proportion to the increase in temperature
e. a nerve which innervates a muscle also innervates the skin

299. The negative pole in galvanism is:
a. cathode
b. ions
c. electrons
d. protons
e. anode

300. Which is in association with ultra sound:
a. thermal
b. kinetic
c. photochemical
d. piezo electric effect
e. dielectric conductivity

301. Non-luminous infrared lamps in use today emit:
a. protons
b. ultra violet
c. visible light
d. far infrared
e. near infrared

Physiotherapy

302. Faradic current causes greater contraction than an equal value of sinusoidal because:
a. faradic current is galvanic in nature
b. faradic current is peaked where sinusoidal is not
c. faradic is alternating sinusoidal is not
d. faradic current has a greater affinity for muscle
e. faradic current was developed specially for muscle

303. Orificial ultra violet applicators are available in:
a. only cold quartz form
b. only in hot quartz form
c. in either hot or cold quartz form
d. in intermittent hot quartz form
e. in continuous hot and cold quartz form

304. The galvanic pole that forms acids, attracts and liberates oxygen, corrodes metals, adheres and hardens tissue, is a vasoconstrictor, acts as a sedative to acute pain and ionizes metals is:
a. the positive pole
b. the negative pole
c. virtual pole
d. indifferent pole
e. smaller pole

305. If passed through the body the path of an electric current travels:
a. the path of least resistance
b. the fastest route
c. through the bones
d. through the muscles
e. the shortest distance

306. The factor preventing sine wave current from producing polar effects is the:
a. reflex effects it produces
b. small amount of current used
c. alternate direction the current flows
d. change in amplitude of the current
e. fact it causes muscular contraction

307. A polarity effect of negative galvanic current is:
a. attracts alkalis
b. vasoconstriction
c. liberates oxygen
d. hardens tissue
e. sedative

308. Dithermy would be of the least value in the treatment of:
a. spastic colitis
b. acute lumbarosacral sprain
c. fibrositis
d. sinusitis
e. lobar pneumonia

309. In the use of sine wave the least current needed is:
a. the motor points are stimulated
b. the pads are of unequal size
c. all of these methods are equal to the pads on either side of the muscle
d. the current runs longitudinally through the muscle
e. the negative pole

310. Infrared rays are produced from one of the following:
a. short wave diathermy
b. sine wave
c. electric heating pad
d. hot water bottle
e. solaria

311. One obvious advantage in the use of microwave diathermy is that:
a. patients appreciate the rapid heating effect
b. the pads are soaked in warm water
c. no direct contact is made with the patient
d. Instrument can be calibrated exactly for each patient
e. a greater area is treated by microwave

312. A generally accepted form of ultra sound treatment involves treating:
a. the whole spinal column generally
b. site of injury only
c. the site and also the spinal nerve origins of the site
d. distal to the site of injury or pain
e. spinal nerve origins of the painful or injured site

313. The proper order of sensitivity of body tissues to ultra violet from most to least sensitive are as:
a. connective, mucous membrane, skin
b. skin, mucous membrane, connective
c. connective tissue, skin, mucous membrane,
d. mucous membrane, connective, skin
e. mucous membrane, skin, connective

314. A predominence of germicidal rays are obtained from a or an:
a. cold quartz
b. hot quartz
c. carbon arc
d. infrared ramp
e. deep therapy lamp

315. What is the recommended safe distance between the source of infrared and the patient area:
a. 4 inches
b. 10 inches
c. 22 inches
d. 24 inches
e. 50 inches

316. Ordinarily the weight of sustained cervical traction with muscle spasm of the intrinsic variety is:
a. 1 - 10 lbs.
b. 25 - 40 lbs.
c. 60 - 70 lbs.
d. 75 - 80 lbs.
e. 80 - 100 lbs.

317. Motorized intermittent traction is of least value in the treatment of:
a. acute torticollis
b. cervical radiculitis
c. scalenus anticus syndrome
d. cervical spondylosis
e. cervical adhesive capsulitis

318. The wax bath is most useful in treating the following:
a. foot ulcers
b. leg spasms
c. temporary paralysis
d. arthritis of the hands
e. lumbar strain

319. One of the following does not emit long wave infra red rays (1500-120,000 A)
a. electric arc
b. heated bricks
c. steam heat
d. radiating hot water bottle
e. electric heating pads

320. Paraffin baths owe their effectiveness to:
a. the fact they are non allergenic
b. their soothing effect on the skin
c. they lend themselves to easy application
d. the heat retaining qualities of warm paraffin
e. the pleasant feeling they impart to the patient
321. The most important use of the tetanizing faradic test and galvanic test is:
 a. testing for A waves
 b. testing for reaction of degeneration
c. determining the state of hypertrophic changes in the muscle
d. passive exercise therapy
e. NOTA

322. The primary physical effect of sinusoidal current is:
 a. photochemical
 b. physiochemical
c. sonar
d. thermal
e. kinetic

323. Before turning on any electrotherapeutic modality it is mandatory to:
 a. determine the power is turned on to the lowest point
 b. be sure the patient is amenable to treatment
c. that the patient understands what is about to happen
d. check the time to avoid over-treatment
e. advise the patient that the treatment might be uncomfortable

324. After a relatively brief treatment with pulsating galvanic current upon removal of the pads the area under each respective pad is observed to be:
 a. without color change
 b. blanched in both areas
c. areas equally discolored
 d. blanched under the negative pad, reddish under the positive pad
e. blanched under the positive pad, reddish under the negative pad

325. The heat production of diathermy results from:
 a. output set too high
 b. electrical energy of the current
c. diathermy applicator contracting the patient's body
d. moisture buildup on the patient's body
e. resistance of tissue to the passage of electrical current

326. The action produced at the positive pole in the use of galvanic current would be that it:
 a. stimulating
 b. softens scars
 c. causes vasodilation
d. relieves pain and congestion
e. causes an alkaline reaction

327. Ultra sound mildly heats the tissue by:
 a. increasing circulation through the part treated
 b. hyperemia at the area being treated
c. conversion of ultra sonic energy into internal friction
d. application of the sound head through a lotion supply
e. direct application of the warm sound head to the body

328. The main effects of local ultra violet irradiation are:
 a. heat and relaxation
 b. exfoliation and swelling
 c. stimulation of local circulation and nerve endings
d. burning and destruction of tissues
e. mental and psychological

329. In the tissues ultra sound produces:
 a. pain
 b. light
 c. destruction of muscles
d. areas of increased and decreased pressure
e. small electrical current

330. Muscle contractions produced by low voltage contractile current can be useful in treating:
 a. atrophy of disuse
 b. hypertonicity
c. hypotonicity
d. fractures
e. skin lesions

331. The nerve supply to the gastrocnemius muscle is severed. A day or two later interrupted pulsating galvanic current is applied over the muscle. It will:
 a. give verrucous response
 b. respond erratically
 c. still contract briskly as reaction of degeneration has not yet become effective
d. be exaggerated in response
e. not respond as it is dead because it is without nerve supply

332. The muscle in which their nerve supply has under-gone complete reaction to degeneration will respond:
 a. feebly to galvanic current
 b. feebly to faradic current
c. briskly to faradic current
d. briskly to sinusoidal and weak to faradic
e. feebly to sinusoidal and strong to faradic

333. The area of greatest response to surface applied stimuli for muscle testing is called:
 a. electro diagnosis
 b. trigger points
c. neuromuscular point
d. nerve conduction point
e. motor point

334. A physiological effect of sine wave treatment is:
 a. hardening of tissues
 b. bacteriostasis effect
 c. increased visual acuity
d. neurological reflex effect, reflex effect
 e. ionization of electrolysis

335. Acute inflammation of the trochanteric bursa may be advantageously treated with the use of:
 a. ice packs
 b. active massage
c. negative galvanism
d. motorized intermittent traction
e. deep massage

336. In the management of the lumbar intervertebral disc syndrome the modality of choice in the acute stage would be:
 a. diathermy
 b. negative galvanism
c. infrared
d. periodic sustained traction
e. intermittent motorized traction

337. In the management of disuse atrophy the modality of choice would be:
 a. ultra sound
 b. diathermy
c. sine wave
d. positive galvanism
e. negative galvanism

338. In the use of pulsed diathermy we also treat the:
 a. ear
 b. nerve roots
c. adrenal glands
d. kidney
e. thyroid gland

339. The motor point in most cases corresponds to the point:
 a. of exit from a muscle from its main nerve
d. in the brain where a motor nerve arises
c. where motor nerves arise
d. of entrance into a muscle of its main nerve supply
e. of exit from the spinal column of a motor nerve

340. The term myotatic reflex is associated with:
 a. galvanism
 b. muscle
c. ultra sound
d. diathermy
e. bone

341. In the management of pneumonitis the modality of choice would be:
 a. negative galvanism
 b. positive galvanism
 c. sine wave
d. diathermy
e. ultra sound

342. Maintenance of balance is provided mainly by the activity of:
 a. hip extensors
 b. knee extensors
c. saleus and anterior tibial muscles
d. all the extensors of the lower extremity
e. all the flexors of the lower extremity

343. While exercising a muscle it is easier to maintain maximal tension by:
 a. concentric exercises
 b. prolonged nerve stimulation
c. increasing the speed of contractions
d. isometric exercises
e. increasing the work load

344. Short wave diathermy may be advisable in one of the following conditions:
 a. bronchitis
 b. pregnancy
c. menstruation
d. malignant growth
e. acute infectious arthritis

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**Physiotherapy**

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23
Physiotherapy

351. Erythema that produces a blister from ultra violet therapy is:
a. sub erythema dose
b. first degree erythema
c. second degree erythema
d. third degree erythema
e. minimal erythema dose

352. One of the following is considered a contra indication to ultra violet irradiation:
a. infantile tetany
b. bronchial asthma
c. rickets
d. acne vulgaris
e. active and progressive forms of pulmonary TB

353. Traction is not indicated in:
a. discopathy
b. strain
c. arthritis
d. dislocation
e. sprain

354. Spinal traction is indicated in:
a. spondylitis
b. spondylosis
c. Pott's disease
d. spinal carcinoma
e. spinal osteomyelitis

355. Intermittent motorized traction would be contra indicated in cervical:
a. osteoarthritis
b. myofibrositis
c. infectious myositis
d. disc degeneration
e. adhesive capsulitis

356. Acute inflammation with non-draining suppuration, tendency to possible hemorrhage, malignant tumors and thermal anesthesia are considered contra indications to use of:
a. ice bag
b. low voltage
c. ultra violet
d. cold, wet application
e. thermo-therapy

357. Hypokinetic back pain occurs as a result of:
a. acute sprain-strain type injury
b. disc herniation
c. degenerative disease of the spine
d. excessive exercising
e. disuse weakness

358. The Australian noted for work in poliomyelitis is:
a. Lindlahr
b. Kenny
c. Semmelweis
da. Schussler
e. Lind

359. A patient will receive optimum infra red rays according to the cosine law if the source is at:
a. a 45 degree angle to the irradiated surface
b. a 60 degree angle to the irradiated surface
c. a 120 degree angle to the irradiated surface
d. right angles to the irradiated surface
e. any angle to the irradiated surface

360. The therapeutic use of ultra violet may be indicated in:
a. heart disease
b. diabetes mellitus
c. arteriosclerosis
d. hyperthyroidism
e. rickets

361. One of the following is considered a contra indication to sine current:
a. its polar effect
b. it heats the body
c. it relieves pain
da. sedation
e. its polar effect

362. Physiological effect not produced by massage is:
a. absorption of exudate
b. freeing of adhesions
c. induration
d. sedation
e. increased muscle tone

363. Ultra sound will:
a. provide gas in tissues
b. intensify gas in tissues
c. vaporize gas in tissues
d. dissipate gas in tissues
e. liquefy gas in tissues

364. For each degree of Fahrenheit rise in body temperature the pulse rate will increase about:
a. 2 beats
b. 4 beats
c. 8 beats
da. 10 beats
e. 14 beats

365. The time used to define the character of a stimulus required to excite nerve tissue is:
a. tapotement
b. chiropraxis
c. irritability
da. chronaxie is twice the rheobase
e. adaptability

366. The physiological effects of sustained traction includes all of the following except:
a. retracts the annulus fibrosus
b. relieves muscle contractures
c. physiologically increases circulatory dynamics d. puts spastic muscles in physiological rest
e. relieves compressive effects of muscle spasm

367. Sinusoidal stimulation is especially indicated in:
a. Bell's palsy
b. radiculitis
c. Parkinson's disease
da. buritis
e. tenosynovitis

368. Evidence of advancing muscle degeneration is shown by:
a. decrease in rheobase
b. increase in latent period
c. decrease in latent period
da. feeling of weakness
e. incorrect chronaxie readings

369. One of the following is not a contraindication to sine wave:
a. over metal
b. through heart
c. chronic scars
da. abrasions
e. patients with pacemaker

370. Over an abrasion on a patient's skin the galvanic current:
a. diminishes
b. becomes spread out
c. becomes faradic
da. increases in strength
e. remains in strength

371. Diathermy is contra indicated in all of the following except:
a. pregnancy
b. malignancies
c. hemorrhage
da. acute inflammatory processes along with fever and suppuration
e. congestive respiratory conditions
372. All of the following are true concerning diathermy except:
   a. It is used as a panacea for painful conditions
   b. Contraindicated over metallic implants
   c. 20 minutes is minimum time for efficient treatment
   d. Painful conditions usually require daily treatment
   e. Use of an insulating material between applicator and patient is indicated

373. Shortwave diathermy is used under which of the following conditions:
   a. Bursitis
   b. Tenosynovitis
   c. Adhesive capsulitis
   d. Hypertrophic arthritis
   e. Acute rheumatoid arthritis

374. Select the answer that best defines galvanic current:
   a. Unidirectional current, low voltage and amperage
   b. Alternating current, low voltage and amperage
   c. Intermittent current, low voltage and amperage
   d. Unidirectional current, high voltage and amperage
   e. Unidirectional current, low voltage, high amperage

375. Which of the following is true of sinusoidal current:
   a. High voltage, low milliamperage, high frequency
   b. Low voltage, low milliamperage, high frequency
   c. Low voltage, high milliamperage, low frequency
   d. Low voltage, low milliamperage, low frequency

376. Agitated water baths are examples of the transfer of heat by:
   a. Conversion
   b. Convection
   c. Radiation
   d. Condensation
   e. Conduction

377. Give the approximate healing time of ligaments after dislocation:
   a. 2-3 weeks
   b. 6 months
   c. 12 - 16 days
   d. 6 - 12 weeks
   e. 6 - 9 months

378. Cold would be contraindicated in which of the following diseases:
   a. Raynaud’s disease
   b. Pott’s disease
   c. Bright’s disease
   d. Shingles
   e. Gangrene
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