

**Aesthetic Laser Home Study Post Test
Post-Test Registration Form, v060828**

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Aesthetic Laser Procedures

Post-Test, v060828

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NOTE THAT EACH QUESTION REFERS YOU TO THE CHAPTER WITH THE INFORMATION. PLEASE MARK YOUR ANSWERS ON THE ANSWER SHEET, AND NOT THIS TEST.

- 1 How does Laser Hair Removal work mechanically? (Chpt 13)
 - a) Laser erases the hair shaft with radiation
 - b) It has a photo-effect on the hair to retard growth.
 - c) It heats the hair follicle to severely damage or destroy it.
 - d) It vaporizes the hair shaft.

- 2 Which laser(s) is best used to target red vascular lesions such as spider veins, Telangiectasia, etc? (Chpt 11)
 - a) Nd:Yag
 - b) CO₂
 - c) CuBr or Pulsed Dye
 - d) KTP, Argon or CuBr

- 3 Which laser(s) is best used to target pigmented lesions such as freckles, age spots, etc.? (Chpt 10)
 - a) Nd:Yag
 - b) CO₂
 - c) Pulsed Dye
 - d) KTP, or CuBr

- 4 When using yellow light lasers for vascular lesions, what is the initial target chromophore? (Chpt 11)
 - a) The oxygenated hemoglobin
 - b) The deoxygenated hemoglobin
 - c) The vessel wall of the capillary
 - d) The vessel walls of the underlying feeders of the capillary

- 5 What best describes the term chromophore, in terms of laser use? (Chpt 1,3)
 - a) Glands in the skin that produce hair color
 - b) The object that absorbs the light
 - c) An instrument used to prepare skin prior to laser use
 - d) Pigment in the hair shaft itself

- 6 What is a primary complication of doing deep ablative skin resurfacing on very dark skin types such as Type V? (Chpt 12)
 - a) All dark skin will develop keloid scars when resurfaced deeply
 - b) Long lasting hypopigmentation
 - c) blistering
 - d) inducement of malignant changes

- 7 What can happen with excess heating of the skin in any aesthetic laser procedure? (Chpt 3,13)
 - a) Scarring
 - b) Hypopigmentation
 - c) Hyperpigmentation
 - d) All of the above

- 8 What chromophore in the skin primarily gives it its skin color? (Chpt 1)
 - a) Melanin
 - b) Blood vessels
 - c) Dermis
 - d) Epidermis

- 9 The Fitzpatrick skin classification system takes into account: (Chpt 1)
 - a) Skin Color only
 - b) Hair Color only
 - c) Skin color and sensitivity to sunlight
 - d) Hair & Skin color, and sensitivity to sunlight

- 10 Which Fitzpatrick skin type would be the hardest to achieve laser hair removal because of competing chromophores? (Chpt 1,13)
 - a) I
 - b) II
 - c) IV
 - d) V

- 11 What gives an indication of the deepest level one should ablate during ablative Laser Skin resurfacing? (Chpt 1,12)
 - a) The depth is preset on the laser(s) via the energy parameters
 - b) Ablation creates only a white superficial eschar which is then wiped away, so depth is not a concern.
 - c) Multiple passes are made until a pinkish coloration is noted, and the laser ablation must be stopped at that point.
 - d) The coloration of the skin is noted and ablation stopped when seeing the yellowish color of the reticular dermis.

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- 12 Which laser would be “safer” during ablative laser skin resurfacing on dark skin such as Type V to avoid complications? (Chpt 12)
- a) CO2 Laser
 - b) Er:Yag Laser
 - c) Nd:Yag Laser
 - d) Ho:Yag Laser
- 13 What is the essential mechanism of action for Laser Skin Rejuvenation using nonablative lasers? (Chpt 9)
- a) Blue light lasers create a “photo-effect” that rejuvenates skin
 - b) Yellow light stimulates collagen production through photochemistry
 - c) Lasers create deep dermal heating to induce inflammatory changes and resulting “skin rejuvenation” during the natural healing.
 - d) Skin rejuvenation can only be achieved with ablative lasers.
- 14 When treating a tattoo (laser tattoo removal) with red pigment, which laser would be the least effective? (Chpt 2, 10)
- a) Ruby laser at 694nm, red.
 - b) Q-switched Nd:Yag laser at 1064nm, infrared
 - c) Q-switched Frequency Doubled Nd:Yag laser at 532nm, green
 - d) Alexandrite laser at 755nm, infrared
- 15 The wavelength of a laser is also its: (Chpt 2)
- a) Color
 - b) Power output
 - c) Type of Laser
- 16 Visible light occurs in which general wavelength range: (Chpt 2)
- a) 400-700 nanometers (nm)
 - b) 4000-7000 nanometers (nm)
 - c) 800-10,600 nanometers (nm)
 - d) 1064-2100 nanometers (nm)
- 17 The Alexandrite laser produces light at: (Chpt 2)
- a) 532nm
 - b) 1064nm
 - c) 755nm
 - d) 694nm
- 18 The Ruby laser produces light at: (Chpt 2)
- a) 532nm
 - b) 1064nm
 - c) 755nm
 - d) 694nm

- 19 Power output in watts measures: (Chpt 2)
 - a) How much energy is delivered
 - b) The rate of energy delivery, but not the amount
 - c) The concentration of energy within a given spot size
 - d) How quickly the treatment can be given

- 20 Energy output in Joules measures: (Chpt 2)
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- 21 Does a Q-Switched Nd:Yag laser produce longer or shorter pulses than a millisecond pulsed Nd:Yag laser? (Chpt 2, 10)
 - a) Longer
 - b) Shorter
 - c) Same pulse lengths

- 22 Which laser(s) would probably be best suited to treating very dark skin for hair removal? (Chpt 13)
 - a) Ruby or Argon lasers
 - b) Diode or Nd:Yag lasers
 - c) Er:Yag laser
 - d) CO2 laser

- 23 All other things being equal (including fluences), which size spot seems to be more effective at laser hair removal with any laser? (Chpt 13)
 - a) Larger Spots
 - b) Smaller Spots

- 24 What hair/skin combination is best suited for laser hair removal? (Chpt 13)
 - a) Dark Skin & Light Hair
 - b) Light Skin & Blonde Hair
 - c) Dark Skin & Dark Hair
 - d) Light Skin & Dark Hair

- 25 Thermal relaxation time (trt) refers to: (3, 13)
 - a) The time it takes to make tissues soft by warming
 - b) The time it takes to generate and to dissipate heat from any structure
 - c) The interval between laser pulses
 - d) The time it takes to build up destructive temperatures

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- 26 Ideally we'd like to apply a "terminal" dose of light for hair removal in a pulse time that: (Chpt 3, 13)
- a) Is longer than the thermal relaxation time (trt) for skin, but shorter than the hair follicle.
 - b) Is shorter than the trt for skin, but longer than the hair follicle
 - c) Is longer than the trt for both skin and hair follicle
 - d) Is shorter than the trt for both skin and hair follicle
- 27 Which laser(s) may be used for nonablative laser skin rejuvenation: (Chpt 9)
- a) Pulsed Dye 577-595nm
 - b) Diode Lasers 810-1500nm
 - c) Nd:Yag 1064nm
 - d) Any of the lasers above
- 28 Which skin cooling method is probably the least effective? (Chpt 3, 13)
- a) Contact Cooling
 - b) Cooling Gels
 - c) Cryo Spray (Dynamic Cooling Device)
 - d) Cold Air
- 29 Cooling methods provide what benefit? (Chpt 3, 13)
- a) Reduce the risk of burns
 - b) Reduce patient pain and discomfort
 - c) Reduce incidence of post treatment swelling and inflammation
 - d) All of the above
- 30 Sapphire crystal "windows" are an example of:
- a) Contact Cooling (Chpt 3)
 - b) Cooling Gels
 - c) Cryo Spray (Dynamic Cooling Device)
 - d) Cold Air
- 31 Potential Contra-Indications to laser hair removal (reasons not to do it) include: (Chpt 13)
- a) History of keloidal scarring
 - b) Active infections (herpes, cold sores)
 - c) Sun sensitivity (not extreme)
 - d) A&B
- 32 In any laser skin procedure, assuming clinically useful fluences are achieved, what is a desirable consequence of slowing the repetition rate of laser pulses (longer time in between each pulse)? (Chpt 13)
- a) Less risk of complications
 - b) Better tolerated by the patient (less pain)
 - c) The procedure will be more clinically effective

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- 33 Laser Hair removal can be enhanced by pre-treating the area with electrolysis, plucking or waxing shortly before the laser treatment. (Chpt 13)
- a) True
 - b) False
- 34 The role of the Laser Safety Officer (LSO) is to: (Chpt 5, 6)
- a) Manage the entire Laser Safety Program
 - b) Operate the laser
 - c) Prevent patients or staff from entering a laser room inadvertently
 - d) LSO's are not required in office type settings.
- 35 The Nominal Hazard Zone (NHZ) around the laser is: (Chpt 5, 6)
- a) The entire room where the laser is operated
 - b) The area where skin or eye injury may result from the laser
 - c) Determined by the Laser Safety Officer
 - d) B&C
- 36 The Laser Treatment Controlled Area(LTCA) is: (Chpt 6)
- a) The entire room or large area where the laser is operated
 - b) Where laser safety glasses must be worn
 - c) Limited to access by only laser trained and authorized personnel
 - d) A&C
- 37 Laser Safety Eyewear must be worn within the: (Chpt 5,6)
- a) Nominal Hazard Zone
 - b) Laser Treatment Controlled Area
 - c) Entire room where laser is used
- 38 Laser Safety Eyewear should: (Chpt 5,6)
- a) Match that for the wavelength(s) of laser(s) used
 - b) Have color coded frames to meet ANSI requirements
 - c) Have colored plastic filters that are the same color as the wavelength of the laser
 - d) A&B
- 39 Laser Safety Eyewear should: (Chpt 5,6)
- a) Be labeled with the wavelength and Optical Density (OD)
 - b) Be available at entry to the Laser Treatment Controlled Area
 - c) Be worn within the Nominal Hazard Zone
 - d) All of the above
- 40 Laser beams are collimated, so can ricochet around the room as a tight beam of light. (Chpt 2)
- a) True
 - b) False

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- 41 Laser Safety Eyewear are guaranteed to protect the wearer from even direct laser impacts into their eyes. (Chpt 5)
- a) True
 - b) False
- 42 Which organization publishes the recommended standards for Safe Use of Lasers in Health Care Facilities? (Chpt 5,6)
- a) OSHA Occupational Safety & Health Administration
 - b) ASLMS American Society for Laser Medicine & Surgery
 - c) NCLE National Council for Laser Excellence
 - d) ANSI American National Standards Institute
- 43 Who “Certifies” (not licensing) Laser Physicians and Operators within a Medical Facility? (Chpt 6)
- a) Each facility sets their own internal certification requirements
 - b) The American Society for Laser Medicine & Surgery
 - c) Each State’s Medical Board
 - d) The Laser Training Institute
- 44 Who determines licensing or authorization to perform laser hair removal by non-physicians: (Chpt 5)
- a) Each facility sets their own internal certification requirements
 - b) The American Society for Laser Medicine & Surgery
 - c) Each State’s Medical Board
 - d) The Laser Training Institute
- 45 Keys to the laser must be stored in a secure location away from the laser when not actually in use. (Chpt 6)
- a) True
 - b) False
 - c) Laser don’t have keys – irrelevant
- 46 Which is the yellow wavelength of the CuBr laser? (Chpt 2,9,10,11)
- a) 511 nm
 - b) 578 nm
 - c) 810 nm
 - d) 1,064 nm
- 47 How does Laser Hair Removal work mechanically? (Chpt 13)
- a) Laser erases the hair shaft with radiation
 - b) It has a photo-effect on the hair to retard growth.
 - c) It heats the hair follicle to severely damage or destroy it.
 - d) It vaporizes the hair shaft.

- 48 What is “permanent” hair reduction, according to the FDA? (Chpt 13)
- a) No hair growth will ever reoccur at the treated site.
 - b) A long term stable reduction in the number of hairs regrowing after a treatment regime.
 - c) An 85% reduction in hair regrowth with each treatment
 - d) A 50% reduction in hair regrowth with each treatment
- 49 What are terminal hairs? (Chpt 1,13)
- a) The coarser hairs such as scalp, armpits, eyebrows
 - b) The hairs which have been laser treated and will die
 - c) The finer peach-fuzz type hairs all over our bodies
 - d) The outer portion of any hair shaft
- 50 What are velus hairs? (Chpt 1,13)
- a) The coarser hairs such as scalp, armpits, eyebrows
 - b) The hairs which have been laser treated and will die
 - c) The finer peach-fuzz type hairs all over our bodies
 - d) The outer portion of any hair shaft
- 51 What is the usual target of Laser Hair Removal? (Chpt 1,13)
- a) Velus Hairs
 - b) Terminal Hairs
 - c) Light Hairs
 - d) Dark Hairs
- 52 Which is the correct sequence of skin structures starting from the outside? (Chpt 1)
- a) Dermis, Epidermis, Dermal-Subcutaneous interface, Subcutaneous tissues
 - b) Epidermis, Dermis, Subcutaneous tissues, Dermal-Subcutaneous interface
 - c) Dermal-Subcutaneous interface, Subcutaneous tissues, Dermis, Epidermis
 - d) Epidermis, Dermis, Dermal-Subcutaneous interface, Subcutaneous tissues
- 53 From where does hair growth arise, and is the laser target for destruction? (Chpt 1,13)
- a) Dermis
 - b) Terminal Hair Shaft
 - c) Hair Follicle
 - d) Eccrine glands
- 54 In which layer of our skin is the stratum corneum? (Chpt 1)
- a) Dermis
 - b) Epidermis
 - c) Basement Membrane
 - d) Subcutaneous tissues

- 55 What chromophore in the skin primarily competes with the hair follicle in absorbing light? (Chpt 13)
- a) Sebaceous glands
 - b) Melanin
 - c) Oxyhemoglobin in capillaries
 - d) Dermis
- 56 What are the adverse consequences of excess heating in the skin deeper than the Dermal-Subcutaneous interface? (Chpt 1,12)
- a) All hair will be removed.
 - b) No adverse consequences since it's deeper than dermal structures.
 - c) Third degree burn, resulting scarring & possible Keloid scars.
 - d) Redness and inflammation which disappears in about an hour.
- 57 Which Fitzpatrick skin type has the darkest colored skin? (Chpt 1)
- a) I
 - b) II
 - c) IV
 - d) VI
- 58 Which hair color would be the easiest to remove by laser, ignoring skin color? (Chpt 1,13)
- a) White
 - b) Gray
 - c) Red
 - d) Black
- 59 Which hair color is the most difficult if not impossible to remove by laser? (Chpt 1,13)
- a) White
 - b) Gray
 - c) Red
 - d) Black
- 60 What is the Anagen phase of hair growth? (Chpt 1,13)
- a) The growth phase
 - b) The regression / atrophy phase
 - c) Dormant or resting stage – where hairs fall out.
 - d) A stage induced by abnormal hormonal levels
- 61 What is the Catagen phase of hair growth? (Chpt 1,13)
- a) The growth phase
 - b) The regression / atrophy phase
 - c) Dormant or resting stage – where hairs fall out
 - d) A stage induced by abnormal hormonal levels

- 62 What is the Telogen phase of hair growth? (Chpt 1,13)
- a) The growth phase
 - b) The regression / atrophy phase
 - c) Dormant or resting stage – where hairs fall out
 - d) A stage induced by abnormal hormonal levels
- 63 What stage of hair growth is most amenable for laser treatment (removal)? (Chpt 1,13)
- a) Anagen
 - b) Catagen
 - c) Telogen
 - d) Any phase
- 64 What happens to the hair shaft at the end of the growth cycle? (Chpt 1,13)
- a) It stops growing, then resumes in the new cycle.
 - b) It falls out (sheds)
 - c) It starts growing from the other end
 - d) It continues growing through all phases
- 65 Are all of our hairs in any one body area in the same phase simultaneously?
(Chpt 1,13)
- a) Yes
 - b) No
- 66 What is the primary reason that multiple treatment sessions are required for successful laser hair removal? (Chpt 13)
- a) Injury to the hair follicle is progressive and takes several treatments
 - b) Not all hair follicles are in the correct growth phase at the same time
 - c) Some hair shafts are just more resistant
 - d) It generates more revenue for the hair removal center
- 67 Aside from the scalp area, what range is typical for the hair growth cycle in most other body areas: (Chpt 13)
- a) 4-6 weeks
 - b) 4-12 months
 - c) 2-6 years
 - d) 3-7 days
- 68 Even though the Fitzpatrick scale does not include hair color, because of sun sensitivity Red-Heads would almost always be considered a Fitzpatrick Type: (Chpt 1)
- a) I
 - b) III
 - c) IV
 - d) VI

- 69 The Nd:Yag laser produces light at: (Chpt 2)
- a) 532nm
 - b) 1064nm
 - c) 755nm
 - d) 694nm
- 70 Power Density of the laser beam indicates: (Chpt 2)
- a) How much energy is delivered
 - b) The rate of energy delivery, but not the amount
 - c) The concentration of energy within a given spot size
 - d) How quickly the treatment can be given
- 71 Treatment parameters for aesthetic laser procedures are usually (but not always) given in: (Chpt 2)
- a) Watts
 - b) Joules
 - c) Watts / cm²
 - d) Joules / cm²
- 72 The term Fluence, as commonly used in aesthetic procedures, is expressed in: (Chpt 2)
- a) Watts
 - b) Joules
 - c) Watts / cm²
 - d) Joules / cm²
- 73 Which beam shape would be more desirable for laser hair removal? (Chpt 2,13)
- a) TEM00 fundamental mode, sharply sinusoidal
 - b) TEM01 “doughnut” mode
 - c) Flat top type mode (i.e. Top Hat)
- 74 What type of non-laser light source is also used for hair removal? (Chpt 13)
- a) Laser Diodes
 - b) Light Emitting Diodes (LED's)
 - c) Intense Pulsed Light System (IPL)
 - d) Arc Lamps
- 75 What is the wavelength of a typical diode laser for hair removal? (Chpt 13)
- a) 755nm
 - b) 810nm
 - c) 2.1 u
 - d) 10.6 u

- 76 Which laser(s) would probably be best suited to treating very dark skin for hair removal? (Chpt 13)
- a) Ruby or Argon lasers
 - b) Diode or Nd:Yag lasers
 - c) Er:Yag laser
 - d) CO2 laser
- 77 All other things being equal (including fluences), which size spot seems to be more effective at laser hair removal with any laser? (Chpt 13)
- a) Larger Spots
 - b) Smaller Spots
- 78 What hair/skin combination is best suited for laser hair removal? (Chpt 13)
- a) Dark Skin & Light Hair
 - b) Light Skin & Blonde Hair
 - c) Dark Skin & Dark Hair
 - d) Light Skin & Dark Hair
- 79 The thermal relaxation time of hair is in the 40-100 millisecond (msec) range, contrasted with that of the epidermis which is in the range of: (Chpt 1,13)
- a) 100-1000 msec
 - b) 40-100 msec
 - c) 1-10 msec
 - d) 10-100 msec
- 80 Which has the larger spot sizes available for hair removal? (Chpt 2,13)
- a) Laser Devices
 - b) Intense Pulsed Light Systems (IPLs)
- 81 Provided that clinically effective fluences are achieved, which is more sparing to skin during laser hair removal: (Chpt 3,13)
- a) Shorter pulse widths
 - b) Longer pulse widths
- 82 Clinical end points (desirable) in laser hair removal include: (Chpt 13)
- a) Redness around the hair shaft (perifollicular edema)
 - b) Blistering
 - c) Hair from follicle is ejected or vaporized
 - d) A&C

- 83 Potential Contra-Indications to laser hair removal (reasons not to do it) include:
(Chpt 13)
- a) History of keloidal scarring
 - b) Active infections (herpes, cold sores)
 - c) Sun sensitivity (not extreme)
 - d) A&B
- 84 Potential Contra-Indications to laser hair removal (reasons not to do it) include:
(Chpt 13)
- a) Gray or White hair to be treated
 - b) Black skin
 - c) Very dark tan
 - d) A&C
- 85 Laser Hair removal can be enhanced by pretreating the area with electrolysis, plucking or waxing shortly before the laser treatment. (Chpt 13)
- a) True
 - b) False
- 86 Laser Safety Eyewear should: (Chpt 5,6)
- a) Be labeled with the wavelength and Optical Density (OD)
 - b) Be available at entry to the Laser Treatment Controlled Area
 - c) Be worn within the Nominal Hazard Zone
 - d) All of the above
- 87 What is the key medical risk to patients when laser hair removal is performed solely by nonmedical personnel? (Chpt 5)
- a) The skill of the operator will not be as good as that of the physician and outcomes will not be as good.
 - b) The nonmedical operator may misdiagnose a skin condition, or miss a skin condition entirely.
 - c) More treatments will be required because the nonmedical operator can't work as effectively.
 - d) There are no risks to patients that are different between physician and nonmedical laser hair removal practitioners.
- 88 Infrared lasers typically used for Laser Hair removal are in what general range:
(Chpt 13)
- a) 400-700 nm
 - b) 800-1400 nm
 - c) 194-400 nm
 - d) 1400-10,000 nm

- 89 What is the difference between Spontaneous and Stimulated Emission of Light? (Chpt 2)
- a) Stimulated emission gives rise to an organized coherent output, while spontaneous does not.
 - b) Spontaneous emission produces more powerful beams of light than Stimulated
 - c) Stimulated emissions must always use electricity, but spontaneous uses another light source
 - d) The individual photons emitted through Stimulation are much brighter than spontaneous
- 90 What are three unique characteristics of laser light? (Chpt 2)
- a) Monochromatic, Powerful and Collimated
 - b) Collimated, Coherent and Monochromatic
 - c) Coherent, Collimated and Powerful
 - d) Laser light always burns, always blinds, and is very bright
- 91 Pick one individual who contributed toward use of lasers in medicine. (Chpt 2)
- a) Leo Geovanni
 - b) Leon Goldman
 - c) Arthur Anderson
 - d) Joseph Marconi
- 92 Why are lasers called "monochromatic" even though they may emit multiple lines of colors. (Chpt 2)
- a) The statement is false; they do only emit one color of light
 - b) They do emit different colors, but each color is a pure, narrow bandwidth
 - c) Monochromatic only means it emits one beam of light, even if it's multi-colored
 - d) The statement is false; it is monochromatic but lasers are infrared so colors don't apply
- 93 According to the wrinkle classification scheme, which class of wrinkles is worse (deepest)? (Chpt 1)
- a) I
 - b) II
 - c) III
 - d) IV
- 94 Eumelanin pigment in hair is responsible for which hair color? (Chpt 1)
- a) Black/brown
 - b) Red/brown
 - c) Gray/white

- 95 An excellent alternative to the more noisy smoke evacuators, for removing odors during laser hair removal, is: (Chpt 5)
- a) Central vacuum systems
 - b) Electrostatic Precipitators
 - c) Plug-in room deodorizers
 - d) Burning incense or candles
- 96 If allowing patients to administer topical anesthetics at home prior to procedures it is important to: (Chpt 7)
- a) Provide explicit written and verbal instructions, and stay within safe dosages
 - b) Ensure that the treated areas are wrapped tightly in saran wrap for 24 hours prior to the procedure
 - c) Cover the largest body area that you believe might be covered in a session
- 97 Non-particulate Microdermabrasion may be used to: (Chpt 8)
- a) “polish” the skin for better transmission during light treatments
 - b) enhance administration of topical medications including anesthetics
 - c) used to exfoliate skin as a fine degree of skin resurfacing
 - d) all of the above
- 98 What is the difference between a collimated beam of light and a divergent one? (Chpt 2)
- a) there is no difference, both divergent and collimated beams spread out
 - b) the beam spread from collimated beams is minimized compared to divergent ones
 - c) the beam spread from divergent beams is minimized compared to collimated ones
 - d) Collimated beams of light are always from laser, and divergent ones always from other light sources.
- 99 What does L-A-S-E-R stand for? (Chpt 2)
- a) Laser And Stimulated Emission of Radiation
 - b) Light And Sound Emitters of Radiation
 - c) Laser Amplification by Solid-State Electronic Remissions
 - d) Light Amplification by Stimulated Emission of Radiation
- 100 Pick the laser which is customarily delivered through an articulated arm. (Chpt 2)
- a) CW Nd:Yag
 - b) CO₂
 - c) Alexandrite
 - d) Argon

- 101 Low Level Laser (Light) Therapy, or LLLT, is used for: (Chpt 2,9)
- a) Treatment of chronic pain
 - b) Accelerate wound healing
 - c) General skin rejuvenation
 - d) All of the above
- 102 When performing any aesthetic laser procedure (other than tattoo removal) around a tattoo, one should: (Chpt 10, 13)
- a) Stay several millimeters away from the edge of the tattoo pigment
 - b) Turn down the laser energy so that you can work over the tattooed area
 - c) Work right up to the edge of the tattoo pigment, using a small card as a mask if desired to protect the tattoo
 - d) Work directly over the tattoo, as long as you're not using one of the q-switched tattoo removal lasers.
- 103 The best way to enhance viewing of subsurface skin features including vasculature during aesthetic laser procedures is: (Chpt 11)
- a) use high intensity halogen lighting during the procedure
 - b) use the highest optical density laser safety glasses that you have available
 - c) use a polarized light source or active visualization system
 - d) Close your eyes each time the laser fires so that you don't need to use the laser safety glasses.
- 104 What are factors that determine power density of any laser beam? (Chpt 2)
- a) TEM structure of the beam and peak power delivered
 - b) Spot size & Power
 - c) Power and Pulse duration
 - d) Wavelength and Power
- 105 The laser wavelength which is most highly absorbed by water is: (Chpt 3,12)
- a) The Er:Yag (Erbium Yag)
 - b) The CW Nd:Yag (Neodymium Yag)
 - c) The CO₂ (Carbon Dioxide)
 - d) The KTP
- 106 The laser wavelength which scatters most through tissue and causes the most diffuse coagulation injury is the: (Chpt 3)
- a) The Ho:Yag (Holmium Yag)
 - b) The continuous wave Nd:Yag (Neodymium Yag)
 - c) The continuous wave CO₂ (Carbon Dioxide)
 - d) The HeNe (Helium Neon)

- 107 How does light from a free beam laser heat tissue? (Chpt 3)
- a) light creates a "photo-effect" within cells to vaporize them
 - b) light is absorbed by the tissues, which generates heat
 - c) the laser beam is hot and heats tissues when it shines on them
 - d) lasers all use cold-cutting capabilities with no heat generation
- 108 The primary advantage of using pulsed laser energy on tissue is: (Chpt 2)
- a) The procedure takes less time
 - b) The procedure is better tolerated by the patient
 - c) Thermal damage from the laser impact is more highly limited
 - d) Reimbursement rates are better for higher pulse powers
- 109 Identify the laser below which relies on acoustical shock wave formation to create its tissue effects: (Chpt 2,10)
- a) yellow light pulsed dye laser for dermatology, vascular lesions
 - b) Q-switch pulsed Nd:Yag laser for tattoo removal
 - c) Millisecond pulsed Nd:Yag laser for laser hair removal,
 - d) Green line of the CuBr laser for pigmented lesions.
- 110 Which laser application involves photochemical reactions, but does not involve either heat or shock wave generation from the laser: (Chpt 2,3,9)
- a) Nd:Yag laser for skin rejuvenation
 - b) photodynamic therapy to treat cancer, or acne using levulan
 - c) yellow light pulsed dye laser use in dermatology, vascular lesions
 - d) yellow light pulsed dye laser use in dermatology, acne
- 111 Which of the following laser pulses exhibit the highest flux? (assume same spot sizes) (Chpt 2)
- a) 1.5 joules delivered in 400 microseconds - 0.0004 seconds
 - b) 1.5 joules delivered in 1/20 of a second - 0.05 seconds
 - c) 1.5 joules delivered in 1/10 of a second – 0.2 seconds
 - d) 1.5 joules delivered in 1 second – 1.0 second
- 112 With surgical lasers, the use of low laser power, when combined with larger spot sizes, can create unseen excessive burning of adjacent tissues, especially if char is allowed to form. (i.e. wart vaporization with a CO2 laser) (Chpt 2,10)
- a) True
 - b) False
 - c) Irrelevant question, power & spot size do not contribute to burning
 - d) True for infrared lasers only

- 113 Which best defines a true laser pulse? (Chpt 2)
- a) an automatic timer or shutter which emits light consistently in controlled intervals, like 0.1 second pulses.
 - b) a compression of laser energy which momentarily emits power at a higher rate than the laser otherwise could in the continuous wave mode.
 - c) a burst of laser energy which creates shock waves
 - d) high power outputs of any type
- 114 Which factor changes power density more rapidly? (Chpt 2)
- a) spot size changes
 - b) laser power changes
 - c) Pulse width changes
 - d) wavelength changes
- 115 Surgical laser systems which can vaporize or photocoagulate tissues are classified by ANSI as: (Chpt 6)
- a) Class I systems
 - b) Class II systems
 - c) Class III systems
 - d) Class IV systems
- 116 The laser which presents a burn hazard only to the surface of the eye and not to the retina is: (Chpt 2,5,6)
- a) CO₂ laser
 - b) Nd:Yag laser
 - c) Argon laser
 - d) Pulsed dye laser, yellow
- 117 Which wavelength labeling of safety glasses offers protection for a KTP laser? (Chpt 2,5,6)
- a) 10.6 micron
 - b) 1.06 micron (1064nm)
 - c) 488 to 515 nm
 - d) 532 nm
- 118 For which type of laser does the glass optics in microscopes or instruments offer protection to the user, in lieu of safety glasses: (Chpt 2)
- a) CO₂ laser
 - b) Nd:Yag laser
 - c) Argon laser
 - d) Pulsed dye laser, yellow

- 119 Select the laser below which does NOT present a retinal burn hazard: (Chpt 5)
- a) CO2 laser
 - b) Nd:Yag laser
 - c) Argon laser
 - d) Pulsed dye laser, yellow
- 120 Lasers such as the Nd:Yag present a fire or burn hazard to dry materials in which one of the following scenarios: (Chpt 5)
- a) When the laser head (output) is fired at a dry towel in the surgical field, but 9-12 inches away from the tip.
 - b) When the laser head (output) is fired at a dry towel across the room from the laser fiber.
 - c) When the laser head (output) is fired into a dry towel while the head is resting in the towel.
 - d) When the laser head (output) is fired at a dry towel several inches away, in the Q-Switched mode.
- 121 For which laser does the glass in the windows of the treatment room offer protection to viewers outside the room, so that NO additional window coverings are required: (Chpt 2,5)
- a) Er:Yag laser
 - b) Nd:Yag laser
 - c) Argon laser
 - d) Pulsed dye laser, yellow
- 122 Which one of the following statements regarding the radiation risks of the laser "environment" to pregnant women is most true: (Chpt 2,5)
- a) Pregnant women should avoid working around lasers during the first trimester.
 - b) Pregnant women should avoid working around lasers during their entire term of pregnancy.
 - c) Laser "radiation" presents no risks to women in any stage of pregnancy.
 - d) Pregnant women should simply wear the radiation dosage tags to monitor
- 123 Which wavelength labeling of safety glasses offers protection for a Pulsed Dye Yellow Light laser? (Chpt 2)
- a) 10.6 micron
 - b) 1.06 micron (1064nm)
 - c) 585 nm
 - d) 2.1 micron

- 124 Which wavelength labeling of safety glasses offers protection for a Ho:Yag laser?
(Chpt 2)
- a) 10.6 micron
 - b) 1.06 micron (1064nm)
 - c) 585 nm
 - d) 2.1 micron
- 125 Which Optical Density of safety glasses offers the highest degree of protection from a Nd:Yag laser? (Chpt 5,6)
- a) 7.0
 - b) 1064 nm
 - c) 10.6 microns
 - d) 4.0
- 126 Which organizations provide guidelines for laser safety/training: (Chpt 5)
- a) American Hospital Association (AHA)
 - b) American National Standards Institute (ANSI)
 - c) American Society for Laser Medicine & Surgery (ASLMS)
 - d) Both B & C
- 127 Who provides voluntary laser certification for nurses, operators & technicians?
(Chpt 5)
- a) The FDA
 - b) ANSI (American National Standards Institute)
 - c) The Laser Training Institute
 - d) National Council on Laser Excellence (NCLE)
- 128 What best describes the ANSI safety regulations? (Chpt 5)
- a) They are federally required safety regulations with the force of law
 - b) They are only suggestions from a volunteer agency and have no regulatory impact.
 - c) They are voluntary standards by themselves, but are used as a reference by other agencies such as OSHA and JCAHO for enforcement.
 - d) They apply only to higher powered industrial lasers and do not apply to medical nor aesthetic lasers.
- 129 Most Aesthetic lasers are classified as which Hazard Class of Laser (ANSI)?
(Chpt 5,6)
- a) Class 1
 - b) Class 2
 - c) Class 3
 - d) Class 4

- 130 All of the following are responsibilities of the LSO, EXCEPT: (Chpt 5,6)
- a) Ensure that warning signs are posted
 - b) Ensure that physicians use appropriate power and exposure settings
 - c) Ensure that the entire staff has been properly trained in Laser Safety
 - d) Ensure that the lasers are properly maintained and serviced.
- 131 How often are formal Laser Safety Audits recommended to be conducted within a facility (even spas or small offices) by ANSI? (Chpt 6)
- a) Every 6 months
 - b) Every year
 - c) No requirements
 - d) Each time the Laser Safety Officer position changes
- 132 Which is a non-beam laser hazard? (Chpt 6)
- a) Laser Plume
 - b) Skin burns
 - c) Retinal eye injury
 - d) Corneal burn
- 133 Which hazard is probably greater with aesthetic laser use? (Chpt 5)
- a) Direct hazards of the laser beam
 - b) Improper procedures & use of the laser
 - c) Non-beam laser hazards such as electrical, etc.
 - d) Long term, unknown complications from laser use.
- 134 The NHZ (Nominal Hazard Zone) requires that: (Chpt 5,6)
- a) All personnel wear safety eyewear upon entering the room
 - b) All personnel wear safety eyewear only when inside the NHZ boundary
 - c) All personnel must follow all control measures within the NHZ
 - d) Both B & C
- 135 How often must the alignment of the treatment laser beam be checked against its aiming beam? (for lasers that have separate treatment & aiming beams) (Chpt 6)
- a) Every Six months
 - b) Every Year
 - c) Every Case
 - d) Only during Periodic Maintenance (PM)
- 136 Who determines the boundaries of the Nominal Hazard Zone (Chpt 5,6)
- a) The operating physician
 - b) The Laser Safety Officer
 - c) The Laser Nurse/Operator in the room
 - d) No one, it is already set as the entire room for medical use

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- 137 Which organization can levy large fines against an institution/office for violation of laser safety standards? (Chpt 5)
- a) ASLMS ,
 - b) OSHA
 - c) Joint Commission
 - d) FDA-CDRH
- 138 What are the requirements for the Laser Treatment Controlled Area (LTCA, or the Laser Room) (Chpt 6)
- a) Safety Eyewear must be made available upon entry to this room
 - b) Safety Eyewear must be worn when entering this room
 - c) Only authorized personnel are to enter this room
 - d) Both A & C
- 139 All Health Care Facilities, including hospitals, clinics, offices, etc. MUST appoint a Laser Safety Officer if lasers are used in the facility. (Chpt 6)
- a) True
 - b) False
 - c) True for Hospitals and Surgical Facilities only
- 140 IPL's (Intense Pulsed Light Systems) fall under the same ANSI requirements as Laser devices. (Chpt 5)
- a) T
 - b) F
- 141 Notwithstanding regulations, IPL's (Intense Pulsed Light Systems) may be safely used for patient treatment without any protective eyewear used by the operator. (Chpt 5)
- a) T
 - b) F
- 142 For those States beginning to impose requirements on non-physician operators to obtain licensing to perform cosmetic laser procedures, the most common requirement is: (Chpt 5)
- a) Laser Certification by a national agency
 - b) Documented training in laser theory and aesthetic application
 - c) Certification as an Aesthetician
 - d) Prior licensing as an electrologist

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- 143 The laser of choice to treat a large port-wine stain on the face would be: (Chpt 11)
- a) KTP laser
 - b) Pulsed Dye yellow light laser
 - c) Nd:Yag infra-red laser
 - d) Q-switched KTP laser