1. Which of the following are the three most important factors in achieving an esthetic restoration?
   a. Color, form, incisal translucency
   b. Form, relative opacity, surface texture
   c. Color, form, surface texture
   d. Embrasure contour, color, and incisal translucency

2. Argon gas shielding during laser welding improves the tensile strength of metal frameworks made from which of the following materials?
   a. Chemically pure titanium and cobalt-chromium alloy
   b. Gold alloy and cobalt-chromium alloy
   c. Chemically pure titanium and Ti-6Al-7Nb alloy
   d. Ti-6Al-7Nb alloy and gold alloy

3. Which hard tissue augmentation technique is the most successful in furnishing bony support for implant placement?
   a. Long term success/survival of implants placed in maxillary sinus augmented bone, regardless of graft material(s) used, appear to be similar to or better than that of implants placed using conventional protocol with no grafting procedure
   b. Implant survival rates in maxillary sinus grafts are poorly documented
   c. Most of alveolar ridge augmentation techniques have detailed documentation and long term follow up studies, so there is no need to have further in-depth, multicenter, long term studies in this subject
   d. Vertical augmentation can predictably generate new bone to successfully support dental implants

4. All of the following statements are true regarding the variables which may contribute to soldering accuracy in dentistry except one. Which one is the exception?
   a. Gap width is an important soldering parameter from both an accuracy and strength perspective
   b. Efficient heating and rapid soldering minimizes porosity and distortion, whereas repeated heating leads to greater distortion
   c. The shrinkage of solder must be compensated for by the setting and thermal expansion of the investment
   d. If proper techniques and materials are used, soldering can completely eliminate misfit of multi-unit FPDs

5. All of the following statements regarding caries are true except one. Which one is the exception?
   a. Mutans streptococci and lactobacilli either separately or together, are the primary causative agents of dental caries
   b. Occlusal surfaces of molars have the highest caries risk and the lingual surfaces of mandibular anteriors have the lowest caries risk
   c. The critical pH of enamel has been estimated to be in the 5 to 6 range with an average of 5.5 being the generally accepted value
   d. Caries lesions can theoretically become arrested at any stage of the caries process.
   e. Fluoride is most effective in inhibiting lesion progression and much less effective in inhibiting the initiation of caries
6. The “Rule of Thirds” describes a laboratory technique for proper development of soft tissue contours of the final prosthesis of which of the following?
   a. Distal extension removable partial dental prostheses
   b. Anterior dental implant restorations
   c. Immediate complete dental prostheses
   d. Ovate pontics for fixed partial dental prostheses
   e. Mandibular overdentures

7. In colorimetry, which combinations below are needed to show metamericism?
   a. One object and one light source
   b. One object and two light sources
   c. Two objects and one light source
   d. Two objects and two light sources

8. What are the two phenomena that can lead to microstructural changes in 3Y-TZP (Yttria-stabilized tetragonal zirconia polycrystals), such as grain pull-out, micro-cracking and surface roughening?
   a. Crack shielding and dissolution
   b. Stress-induced transformation and low temperature degradation
   c. Dissolution and low temperature degradation
   d. Stress-induced transformation and dissolution

9. Which group of subjects with shortened dental arches (SDA) and RPD's reported the highest quality-of-life?
   a. All groups reported a high quality-of-life with RPD's and SDA's
   b. Subjects with SDA's with intact anterior teeth
   c. Subjects with SDA's and interrupted anterior regions
   d. Subjects with SDA's with intact anterior regions and distal extensions
   e. None of the groups reported improved quality-of-life with RPD's and SDA

10. Which of the following statement is not true?
    a. The use of RPD's leads to detrimental qualitative and quantitative changes in plaque
    b. Clinical trials have shown that if basic principles of RPD design are followed (rigid major connectors, simple design, proper base adaptation), periodontal health of the remaining dentition can be maintained
    c. Frequent hygiene recalls and prosthetic maintenance are essential tools to achieve a good long-term prognosis
    d. Removable partial dentures do not cause any adverse periodontal reactions, provided that preprosthetic periodontal health has been established and maintained with meticulous oral hygiene
    e. A number of studies, mainly in vitro, have come to agree on the ideal RPD design

11. The following are advantages of telescopic prostheses except one. Which one is the exception?
    a. Retrievability
    b. Low cost and esthetics
    c. Easy access for oral hygiene
    d. Localized failure can be repaired without reconstruction of the entire superstructure
12. Which of the following is/are true regarding the accuracy of implant impressions?
   a. More studies reported greater accuracy when using direct open tray impressions with the splint technique than with the nonsplint technique for implant impressions at abutment level or implant level.
   b. For situations in which there were 3 or fewer implants, most studies showed no difference between the direct open tray impression and indirect closed tray impression techniques; whereas for 4 or more implants, more studies showed higher accuracy with the direct open tray impression technique.
   c. Polyether and poly(vinyl siloxane) were the recommended materials for the implant impressions.
   d. All of the above

13. The following guidelines for the care and maintenance of dentures are correct except one. Which one is the exception?
   a. Careful daily removal of the bacterial biofilm present in the oral cavity and on complete dentures is of paramount importance to minimize denture stomatitis and to help contribute to good oral and general health.
   b. Patient can place dentures in boiling water to kill bacteria adhered to dentures.
   c. Dentures should not be soaked in sodium hypochlorite bleach, or in products containing sodium hypochlorite, for periods that exceed 10 minutes.
   d. Improper use of zinc-containing denture adhesives may have adverse systemic effects.

14. Conventional loading remains the procedure of choice for partially edentulous sites in the esthetic zone when:
   a. Stability is considered inadequate for early or immediate loading.
   b. The patient or implant site is compromised.
   c. Parafinction is present.
   d. Extensive augmentation or sinus lift procedures are required.
   e. All of the above.

15. The limiting taper of a preparation specifies the exact quantitative boundary for taper adequate to provide:
   a. Stability.
   b. Retention.
   c. Resistance.
   d. Contour.

16. It has been suggested that an edentulous patient with complete dentures without implants has masticatory efficiency ability of what percentage of a natural dentition?
   a. 80%
   b. 50%
   c. 30%
   d. 10%

17. Which of the statements below describes the phenomenon of transformation toughening, as exhibited by the zirconia commonly used for dental restorations?
   a. A crystallographic transformation from metastable tetragonal to monoclinic phase, associated with a volume increase, thereby creating compressive stresses.
   b. A transformation from tetragonal to a more stable yttria-enriched cubic phase, which is resistant to low temperature degradation.
   c. A process of heat treatment of sintered zirconia leading to a transformation from monoclinic to a more stable tetragonal phase.
   d. None of the above.
18. A disadvantage of immediate placement of dental implants is:
   a. Fewer surgical procedures.
   b. Shorter treatment time.
   c. Improved esthetics.
   d. Lack of control of final position.
   e. Psychological effects.

19. After 5 years, the peri-implant marginal bone loss around splinted as compared to nonsplinted implant-supported restorations in the posterior maxilla is:
   a. Significantly higher.
   b. Significantly lower.
   c. Nonsplinted implants failed catastrophically.
   d. No significant difference.

20. To objectively evaluate gingival biotype the following procedure is recommended:
   b. Assessment with a periodontal probe.
   c. Assessment with provisional restoration.
   d. Bone sounding.

21. In clinical scenarios where the implant is adequately placed in the esthetic zone and soft tissue is relatively thin the abutment that will cause the least color change to the tissue is a(an):
   a. Titanium abutment.
   b. Titanium abutment veneered with porcelain.
   c. Alumina abutment.
   d. Zirconia abutment.

22. In fabricating the cast metal framework for a removable dental prosthesis, the blockout used to correctly orient the retentive clasp arm pattern on the refractory cast is termed:
   a. Parallel blockout.
   b. Arbitrary blockout.
   c. Tripod blockout.
   d. Shaped blockout.

23. All of the following arise from the 1st branchial arch except one? Which one of the following is the exception?
   a. Meckel’s cartilage
   b. Muscles of mastication
   c. Trigeminal nerve
   d. Muscles of facial expression
   e. Sphenomandibular ligament

24. All of the following are shortcomings when using zirconia implant abutments, with one exception. Which of the following is the exception?
   a. Higher tendency for surface-bound bacterial plaque at early stages of placement
   b. Recommended milling to a minimal thickness of 0.5 mm to withstand functional load
   c. Difficulty in masking the inherent white color of the material
   d. Decrease in implant abutment strength following cyclical loading
25. Which settings are of least significance when setting a non-stereo graphic fully adjustable articulator?
   a. Intercondylar distance and medial insert
   b. Top wall and progressive side shift
   c. Progressive side shift and medial inset
   d. Top wall and rear wall
   e. Rear wall and progressive side shift

26. Who described a method of determining Occlusal Vertical Dimension by the patient’s neuromuscular perception?
   a. Demer
   b. Lytle
   c. Shannah
   d. Boos
   e. Atwood

27. What element(s) are responsible for the ability to heat soften/harden gold alloy?
   a. Zn
   b. Ag
   c. Ru and Mb
   d. Zr
   e. Cu

28. When using implants to replace multiple-tooth spans in partially edentulous arches the number of implants is based upon:
   a. Size of the edentulous area.
   b. Amount of bone available.
   c. The opposing dentition.
   d. Location in the dental arch.
   e. All of the above.

29. If the occlusal load on an implant remains constant, the stress magnitude:
   a. Increases with increasing area.
   b. Decreases with decreasing area.
   c. Remains unaffected.
   d. Decreases with increasing area.

30. Drift is the mesial or distal movement of a tooth through a stable alveolar ridge, and this can most often be observed in the:
   a. Incisors.
   b. Canines.
   c. Premolars.
   d. Molars.

31. The minimum safe distance between two implants in the esthetic zone is:
   a. 1mm.
   b. 3mm.
   c. 5mm.
   d. 7mm.
32. It has been shown that most dentists and lay people do not notice a maxillary midline discrepancy as much as:
   a. 4mm.
   b. 5mm.
   c. 6mm.
   d. 7mm.

33. Which one is false regarding saliva?
   a. Decreased salivary flow can cause increased caries incidence, susceptibility to oral candidiasis and burning mouth
   b. The mean daily salivary output ranges from 500 to 1500ml; the rate of secretion decreases during sleep and increases during the waking hours
   c. The parotid glands are classified as mucous glands and contribute up to 60% of the total volume of saliva
   d. The sublingual glands are classified as mixed serous and mucous and contribute 5% of the salivary volume

34. The earliest stability of soft and hard tissues when placing dental implants into extraction sockets is predictable at:
   a. The time of extraction.
   b. 6-8 weeks after extraction.
   c. 3 months after extraction.
   d. 6 months after extraction.

35. Ectodermal dysplasia (ED) is a group of inherited disorders, which have variable inheritance patterns. If a mother has partial expression ED (missing lower incisors), and her 2 sons have fully expressed ED by manifesting an almost complete absence of teeth. This inheritance pattern is likely to be:
   a. Autosomal dominant.
   b. Autosomal recessive.
   c. X linked.
   d. Y linked.

36. When viewing a diagram of Posselt’s envelope of motion in the sagittal plane, the maximum intercuspal position is located at which position?
   a. Lowest point
   b. Most anterior point
   c. Most posterior point
   d. Most superior point

37. Which of the following has been identified as the primary fungal species found in patients with denture stomatitis?
   a. C. albicans
   b. C. glabrata
   c. C. tropicalis
   d. C. multiformis

38. The following conclusions have been drawn from lab studies concerning stress distribution in post and cores except one. Which one is the exception?
   a. Greatest stress concentrations are found at the shoulder interproximally and at the apex
   b. Stresses are increased as the post length increases
   c. Parallel sided posts generate high stresses at the apex
   d. The cement layer results in a more even stress distribution
39. The following statements are true relative to beryllium in crown and bridge alloys except one. Which one is the exception?
   a. Alloys may contain up to 2\% beryllium
   b. Improves castability
   c. Increases the melting range
   d. Increases the oxide layer of the alloy

40. According to Weinberg, what is the largest error when using straight condylar path non-arcon articulators?
   a. Use of an arbitrary hinge axis
   b. Use of centric relation records
   c. Lack of individual working condyle motion
   d. Lack of individual setting for Fischer’s angle

41. The feature “concave cingulum reduction” provides which function in an all-ceramic crown preparation?
   a. Retention
   b. Marginal integrity
   c. Structural durability
   d. Resistance
   e. Cement space

42. In the preparation of posterior teeth what is the angle of the functional cusp bevel to the long axis of the tooth?
   a. 15 degrees
   b. 25 degrees
   c. 35 degrees
   d. 45 degrees
   e. 60 degrees

43. A residual ridge defect/deformity that presents with normal ridge width, but loss of ridge height would fall into which Seibert Class?
   a. Class O
   b. Class I
   c. Class II
   d. Class III

44. Which of the following elements is not an oxide scavenger?
   a. Silicon
   b. Indium
   c. Gallium
   d. Zinc

45. The best source of retention for an obturator restoring a partially dentate arch is the:
   a. Palate.
   b. Teeth.
   c. Nasal conchae.
   d. Scar band.
46. One of the main advantages of using an osteomyocutaneous flap from the fibula for microsurgical vascular reconstruction of the mandible is:
   a. A cost effective source of bone.
   b. That the fibula is not a weight bearing bone.
   c. That the fibula has vascular perforators at every 10 mm and can be osteotomized into multiple sections.
   d. That it accepts miniplates well.

47. A patient is referred to you for resection of a tumor of the maxilla involving the posterior lateral left quadrant which pathologically involves tooth 13. The anterior osteotomy should be through the:
   b. Socket of tooth 12.
   c. Interseptal bone mesial to tooth 13.
   d. Interseptal bone mesial to tooth 12.

48. Which of the following abutment materials have been shown to form a hemidesmosomal attachment with gingival epithelial tissue?
   a. Titanium
   b. Cast gold
   c. Pressed porcelain
   d. Hand laminated porcelain

49. The purpose of a ferrule is to improve the structural integrity of a pulpless tooth. What is the recommended ferrule?
   a. 60 degree bevel finish below margin
   b. Tapered dentinal walls
   c. 1.01mm coronal dentin above the shoulder margin
   d. No ferrule is needed, dowel strengthens tooth

50. Which of the following common class of medications does not cause xerostomia as one of their side effects?
   a. Diuretics
   b. Antihistamines
   c. Antibiotics
   d. Beta Blockers

51. Which of the following is true relative to occlusal rests?
   a. The floor of the rest seat must be inclined slightly upward from the guide plane
   b. It should occupy 1/4 to 1/3 the width of the mesiodistal diameter of the abutment tooth
   c. Should occupy 1/3 of the buccolingual width of the tooth measured cusp tip to cusp tip
   d. Outline should be triangular in form

52. Due to its staining and impact on taste, chlorhexidine use should be limited to how many consecutive days, when used to decrease caries risk?
   a. 3
   b. 7
   c. 10
   d. 14
53. The supposition that patients with controlled diabetes tend to have higher failure rates for dental implants has:
   a. Not been demonstrated.
   b. Been demonstrated for Type I.
   c. Been demonstrated for Type II.
   d. Been demonstrated for Type I and Type II.

54. Which of the following **IS NOT** a function of Indium in gold-based ceramic alloys?
   a. Grain refiner
   b. Decreases melting range
   c. Oxide former
   d. Increases the hardness of the alloy
   e. Improves the ceramo-metal bond

55. What critical occurrence takes place during an osteotomy if the bone temperature exceeds 43°C?
   a. Alkaline phosphatase begins to breakdown
   b. Collagen fibers lose flexibility and tensile strength
   c. Red blood cells ability to carry oxygen decreases dramatically
   d. Osteoblastic cells begin to die
   e. Osteoclastic cells are activated

56. The design of a preparation for a cast restoration and the execution of that design are governed by five principles except one. Which one is the **exception**?
   a. Preservation of tooth structure
   b. Surface roughness
   c. Retention and resistance
   d. Structural durability
   e. Marginal integrity

57. Indications for screw-retained posterior fixed implant restorations include all the following except one. Which one is the **exception**?
   a. Implant shoulder location incompatible with a cemented suprastructure
   b. Screw access located on the facial of the restoration
   c. Reduced restorative space (<5mm)
   d. Extended implant-supported rehabilitations, involving numerous implants
   e. High level of complexity

58. All of the following are true regarding the clinical significance of attached gingiva except one. Which one is the **exception**?
   a. Prevents spread of inflammation to deep tissue (less vascular).
   b. May prevent recession of marginal gingiva.
   c. Prevents excessive movement of free gingiva.
   d. Resists damage from brushing.
   e. Contains only desmosomal attachment.

59. Which of the following is the result of an investment being heated in a burnout oven to eliminate the wax pattern and prevent the alloy from solidifying prior to completely filling the mold:
   a. Wax pattern expansion.
   b. Thermal expansion.
   c. Hygroscopic expansion.
   d. Setting expansion.
60. A patient presents missing only teeth #7, 8, 9 of the maxillary arch and due to caries you extract tooth #3. Other than the above listed teeth all of the patients other maxillary dentition is present. What is the patient’s correct classification prior to and after the extraction?
   a. Kennedy Class 3; Kennedy Class 4 Modification 1
   b. Kennedy Class 4; Kennedy Class 3 Modification 1
   c. Kennedy Class 3; Kennedy Class 4 No Modification
   d. Kennedy Class 4; Kennedy Class 3 No Modification

61. Hanau's Quint relates to balanced occlusion in complete denture therapy. Which of the following factors is not included in this theory?
   a. Incisal guidance
   b. Condylar guidance
   c. Arch form
   d. Plane of occlusion
   e. Compensating curve

62. What happens if an irreversible hydrocolloid impression is left in the mouth too long?
   a. Loss of detail will result.
   b. There will be an increased tendency for the material to adhere to the teeth.
   c. The time allowed to pour the impression in stone is shortened.
   d. A and B.
   e. B and C.

63. Which of the following is the function of the superior lateral pterygoid muscle?
   a. Elevates the mandible
   b. Positions the condylar disk during closing
   c. Protrudes the mandible
   d. Depresses the mandible
   e. Retrudes the mandible

64. Non elastic impression materials include all of the following except:
   a. Impression plaster.
   b. Impression compound.
   c. Impression waxes.
   d. Polyether.

65. In a recent retrospective study, the survival rate of lithium disilicate single crowns over 10 years was:
   a. 95.5 %.
   b. 85.5 %.
   c. 75.5 %.
   d. 65.5 %.

66. What is the most important factor in complete denture retention?
   a. Cohesion
   b. Peripheral seal
   c. Adhesion
   d. Undercuts
67. The maximum film thickness of Type I Zinc Phosphate cement according to the ADA specification #96 is:
   a. 15 µm.
   b. 25 µm.
   c. 40 µm.
   d. 100 µm.

68. When compared to non-infected teeth, the success rate of non-surgical endodontic therapy in teeth exhibiting apical periodontitis is decreased by:
   a. 0-9%.
   b. 10-19%.
   c. 20-29%.
   d. 30-39%.

69. When making fixed partial restorations connecting teeth and implants, the most common complication seen is:
   a. Biologic implant failure.
   b. Intrusion of abutment tooth.
   c. Porcelain fracture.
   d. Implant screw loosening.

70. Which of the following materials is not used as an anti-flux in prosthodontic soldering procedures?
   a. Graphite (C)
   b. Boric Acid (H₃BO₃)
   c. Whitening (ZnO₂)
   d. Rouge (Fe₂O₃)

71. What is the effect of dentin pre-treatment with phosphoric acid on the microtensile bond strength when luting with self-adhesive resin-based cements?
   a. It has a positive effect
   b. It has a negative effect
   c. It has no effect

72. How long does it take to generate slurry water from a discarded cast?
   a. 12 hours
   b. 5 hours
   c. 24 hours
   d. 48 hours

73. Criteria for a flapless approach to implant surgery include all of the following except one. Which one is the exception?
   a. Adequate soft tissue thickness of 2.5-3.0 mm
   b. Adequate residual bone width relative to the planned implant diameter
   c. Adequate bone height relative to the planned implant length
   d. Presence of 1mm of keratinized soft tissue
   e. Adequate primary implant stability

74. With respect to porcelain system alloys, which best describes the function of gold?
   a. Acts as a hardening agent
   b. Lowers melting range and density
   c. Improves workability and provides corrosion and tarnish resistance
   d. Increases fluidity, improves castability and polishability
75. What are three (3) signs of an unstable occlusion?
   a. Misaligned teeth, excessive wear, crepitus of TMJ
   b. Masticatory muscle soreness, paranormal function, hypermobility of 1 or more teeth
   c. Hypermobility of 1 or more teeth, excessive wear, migration of 1 or more teeth
   d. Migration and hypermobility of 1 or more teeth, crepitus of TMJ

76. The metal-porcelain junction should be placed at least ______mm way from the occlusal centric contacts to prevent porcelain fracture.
   a. 0.5
   b. 1.0
   c. 1.5
   d. 2.0

77. After surgical crown lengthening that includes osseous resection, the treating prosthodontist should wait at least ______ before the initiation prosthodontic care in the resected areas.
   a. 3 weeks and possibly 6 weeks for esthetically important areas
   b. 1 month and possibly 3 months for esthetically important areas
   c. 5 weeks and possibly 12 weeks for esthetically important areas
   d. 3 months and possibly 6 months for esthetically important areas
   e. 6 months and possibly 12 months for esthetically important areas

78. A limited amount of micromotion of up to ____ μm does not seem to interfere with successful osseointegration.
   a. 25 μm
   b. 50 μm
   c. 150 μm
   d. 300 μm
   e. 500 μm

79. When treatment planning for implant placement in posterior maxillae:
   a. Short implants are the best choice.
   b. Wide implants are the best choice.
   c. The use of short and wide implants will have a comparable survival rate as sinus lifts and augmentations.
   d. There is high level of evidence that small and wide implants should not be used.

80. Which elastomeric impression material exhibits these properties: dimensional stability, accuracy, short setting and working time, imbibition, and high elastic modulus?
   a. Polysulfide polymer
   b. Condensation silicone
   c. Addition silicone
   d. Polyether

81. The amount of filler in an elastomeric impression material affects all of the properties below except one. Which one is the exception?
   a. Viscosity
   b. Fine detail reproduction
   c. Polymerization shrinkage
   d. Working time
   e. Sheer thinning
82. According to Aramany's proposed classification system, which classification group is defined by a unilateral defect retaining the anterior teeth on the ipsilateral side?
   a. Class I
   b. Class II
   c. Class III
   d. Class IV
   e. Class V

83. The most serious adverse effect of the chronic and excessive use of some denture adhesives reported to date is:
   a. Tissue inflammation.
   b. Zinc-induced neurotoxicity.
   c. Xerostomia.
   d. Denture stomatitis.
   e. Overgrowth of candida.

84. Which of the following tissues/structures do not physiologically define the classic neutral zone in removable prosthodontics?
   a. Lateral borders of the tongue
   b. Buccal mucosa and musculature
   c. Ventral surface of the tongue
   d. Labial mucosa and musculature

85. Following polymerization, what are the observed volumetric and linear shrinkage of heat-activated denture base resin?
   a. 25% and 10%
   b. 21% and 10%
   c. 10% and 5%
   d. 2% and 15%
   e. 7% and <1%

86. Many investigators now believe that the location and mechanism of clinical failure for monolithic ceramic restorations is:
   a. At wear facets on the oral surface due to compressive stress.
   b. On the cementation (intaglio) surface due to compressive stress.
   c. At wear facets on the oral surface due to tensile stress.
   d. On the cementation (intaglio) surface due to tensile stress.

87. According to the Cochrane reviews, all of the following regarding the loading of dental implants are correct except one. Which one is the exception?
   a. Conventional loading of dental implants is defined as being greater than 2 months subsequent to implant placement.
   b. Early loading of dental implants is defined as being between 1 week and 2 months subsequent to implant placement.
   c. Immediate loading is defined as being earlier than 1 week subsequent to implant placement.
   d. Delayed loading is defined as being 4-6 months subsequent to implant placement accompanied by osseous grafting.
88. In evaluating the quality differences of craniofacial pain of cardiac origin vs. dental origin, which of the following pain descriptions would likely be associated with pain of cardiac origin?
   a. Pressure or burning pain
   b. Throbbing and aching pain
   c. Sharp shooting pain
   d. Electric shock-like pain

89. Which of the following Zirconia copings demonstrates the greatest light transmission compared with IPS e.max Press?
   a. Lava
   b. IPS e.max ZIRCAD
   c. Vita YZ
   d. Procera AllZircon

90. What are the four stages of the setting reaction of dental stone?
   a. Fluid, plastic, friable, carvable
   b. Stringy, sandy, doughy, set
   c. Viscous, fluid, carvable, set
   d. Fluid, friable, sandy, set

91. Pertaining to dental gypsum products, what classification does a high-strength, low expansion stone fall into?
   a. ISO Type 1
   b. ISO Type 3
   c. ISO Type 4
   d. ISO Type 5
   e. ISO Type 6

92. As first described by Kelly in 1972 which of the following are associated with Combination Syndrome:
   a. Destructive changes in hard and soft tissues of patients with complete maxillary denture opposing an unstable bilateral free-end mandibular partial denture.
   b. Extrusion of the remaining mandibular anterior teeth and alveolar process surrounding them and loss of posterior mandibular bone.
   c. Papillary hyperplasia.
   d. An atrophic premaxilla and hypertrophy of the tuberosity leading to a reversal of the occlusal plane.
   e. All of the above.

93. Delayed passive eruption is defined as:
   a. Apical shift of the Dentogingival junction.
   b. Junctional epithelium remains along the convexity of the anatomic crown but does not migrate apically.
   c. Inflammation of the sulcular gingival.
   d. A large clinical crown with gingival tissue located occlusally.

94. A limiting factor to the cosmetic success of a maxillary orthognathic procedure to treat vertical maxillary excess (VME) is the amount of vertical translation of the lip. Which of the following characteristics is favorable for an orthognathic procedure to be successful without additional periodontal treatments?
   a. Lip translation exceeds the vertical height of the tooth
   b. Translatory dimension of the lip is similar to the length of the tooth being measured
   c. Unattractive tooth form and gingival display
   d. Lip translation will not affect the need for periodontal surgery
95. According to House, a class III palatal throat form is associated with all of the following characteristics except one. Which one is the exception?
   a. “Curtain” of the soft palate turns down abruptly
   b. Very small or no apparent tuberosities
   c. Immovable band of tissue 5-12 mm distal to a line drawn across the distal edge of the tuberosities
   d. Usually accompanies small maxilla

96. Lingualized occlusion in complete dentures is described as:
   a. The movement of all teeth toward the lingual for better force control.
   b. The use of the lingual cusp of the maxillary tooth as the functional occlusal element.
   c. The use of the lingual cusp of the mandibular tooth as the functional occlusal element.
   d. Strictly a balanced occlusal scheme.
   e. Strictly a non-balanced occlusal scheme

97. Intracoronal reinforcement does not significantly increase the clinical success rate of which of the anatomic groups of endodontically treated teeth?
   a. Maxillary and mandibular incisors and canines
   b. Maxillary and mandibular premolars
   c. Maxillary and mandibular molars
   d. None of the above

98. According to Turner and Missirlian, a Category 2 extremely worn dentition is described as:
   a. Excessive wear with loss of VDO but limited space for restorative materials.
   b. Excessive wear with loss of VDO but with available space for restorative materials.
   c. Excessive wear without loss of VDO but limited space for restorative materials.
   d. Excessive wear without loss of VDO but with available space for restorative materials.

99. When considering placement of a maxillary implant with simultaneous sinus grafting of the implant site, the decision between a single stage or a two stage technique is most influenced by which of the following factors?
   a. Presence or absence of septa within the sinus
   b. Diameter of the desired implant
   c. Anticipated primary implant stability
   d. History of previous sinus infections
   e. Planned type of prosthesis

100. What extraoral landmarks define Camper’s plane?
    a. Inferior border of ala of nose to inferior border of tragus
    b. Porion and inferior border of orbitale
    c. Inferior border of ala of nose and superior border of tragus
    d. Inferior border of ala of nose and middle of tragus
    e. Outer canthus of eye and superior border of ala of nose

101. Which of the following statements is most accurate when considering implants in a severely atrophic mandible?
    a. The healing time for implants placed in the mandible is not affected by the extent of mandibular atrophy
    b. Bicortical penetration has not been shown to increase implant success
    c. Wider implants should generally be used when treating atrophic mandibles
    d. Implant placement in an atrophic mandible risks mandibular fracture
    e. All of the statements above are accurate
102. Maintenance of the interproximal papilla as related to the interproximal contact area for anterior teeth been documented in several publications. What position of the interproximal contact from crestal bone will yield 100% complete papilla fill?
   a. 5mm
   b. 6mm
   c. 7mm
   d. <5mm

103. According to the golden proportion and the dimensions of the face to selection of denture teeth, which of the following is incorrect?
   a. Vertical lines from the lateral margin of the nose during a smile was the same as the maxillary intercanine widths at the canine tips
   b. The mandibular incisors width could be determined by the width of the eyes
   c. Maxillary canine width could be related to distance between the outer canthus of the eyes
   d. One sixteenth the bi-zygomatic width

104. According to Posselt, what percentage of individuals exhibit maximal intercuspal position coincident with centric occlusion?
   a. 6%
   b. 8%
   c. 10%
   d. 12%
   e. 14%

105. Which of the following is not considered to be an occlusal interference?
   a. Occlusal interferences with arc of closure
   b. Working occlusal interferences
   c. Nonworking occlusal interferences
   d. Protrusive occlusal interferences
   e. None of the above

106. All of the following are considered common complications associated with implant cantilever restorations except one. Which one is the exception?
   a. Screw loosening
   b. Bone loss around implant
   c. Porcelain fracture
   d. Loss of retention of the prosthesis

107. The five elements of neutrocentric complete denture occlusion are:
   a. Tilt, rotation, position, inclination, centralization.
   b. Width, depth, length, tilt, angulation.
   c. Position, proportion, inclination, tilt, number.
   d. Neutralization, inclination, rotation, centralization, duplication.
   e. Position, proportion, pitch, form, number.

108. Complete imaging for implant dentistry should reveal all of the following except one. Which one is the exception?
   a. Presence of disease
   b. Sinus volume
   c. Location of anatomic features to be avoided
   d. Osseous morphology
109. Which of the following complications of cantilevers extending from unilateral implant-supported fixed dental prostheses is the least common?
   a. Loss of fixed dental prosthesis retention
   b. Veneering material fracture
   c. Abutment screw loosening
   d. Fracture of the fixed dental prosthesis framework
   e. Abutment screw fracture

110. Which of the following statements regarding gingival recession in the absence of underlying periodontitis is most accurate?
   a. Like all attachment loss, the etiology of recession is mediated by bacteria
   b. Recession is strongly correlated with a deficient alveolar bony housing for the existing root volume
   c. Orthodontic arch expansion does not appear to increase the risk of gingival recession
   d. Recession in young adults can be predictably halted with oral hygiene instruction and close observation
   e. Recession is strongly correlated with premature excursive occlusal contacts

111. Which of the following statements regarding caries and caries risk assessment for prosthodontic patients is incorrect?
   a. Partially edentulous patients treated with fixed and removable dental prostheses are at a higher risk of caries than patients without prostheses
   b. If an early carious lesion is remineralized in the presence of sufficient fluoride, the treated surface is much more resistant to subsequent acid attack
   c. Caries removal and placement of definitive restorations alone significantly decreases the risk of future caries
   d. Chewing xylitol-containing gum can significantly reduce the risk of recurrent caries for prosthodontic patients
   e. 10% povidone-iodine rinses have not been shown to be effective in caries prevention for adults

112. The following are advantages of cement retained implant restorations, except one. Which one is the exception?
   a. Passivity of fit
   b. Better esthetics
   c. Stable occlusal contacts
   d. Easy to retrieve

113. According to Weinberg, a facebow deviation from the true hinge axis of 5mm will result in an anteroposterior displacement of _____ at the second molar.
   a. 0.1mm
   b. 0.2mm
   c. 0.5mm
   d. 1.0mm
   e. 2.0mm

114. In the CIE L*a*b* quantification “a*” stands for the ____________
   a. Amount of color saturation.
   b. Amount of green/magenta in the color.
   c. Amount of opacity of the tooth.
   d. Amount of yellow/blue in the color.
115. Which metal is partially responsible for providing the oxide layer to aid in the bonding of opaque to the metal coping in a metal ceramic restoration?
   a. Copper
   b. Tungsten
   c. Gallium
   d. Selenium

116. Which of the following statements regarding tooth preparation design is false:
   a. It is recommended the total occlusal convergence range between 20 and 30 degrees.
   b. Occlusocervical/incisocervical dimension for molars is 4 mm and premolars and anterior teeth is 3 mm.
   c. The ratio of occlusocervical/incisocervical dimension to faciolingual dimension is 0.4.
   d. Axial grooves or boxes are frequently needed with molars to augment resistance form due to a shorter occlusocervical dimension, less favorable occlusocervical/faciolingual ratio, and generally greater occlusal convergence.

117. Regarding the relationship between satisfaction with mouth and number and position of teeth which of the following is true?
   a. Maintenance of incisors and canines is enough to fulfill aesthetic and functional requirements.
   b. Occlusion with 10 pairs of teeth up to the 2nd premolars, “shortened dental arch”, for 45 years old candidate is more beneficial than molar extensions with partial dentures.
   c. RPDs improve occlusal stability compared to shortened dental arch.
   d. Edentulous patients treated with implant supported SDA reported lower satisfaction level than patient with natural teeth on SDA occlusion.
   e. Open tooth spaces in premolar-molar areas are highly unaccepted and recommended to be restored with FPD and/or RPD.

118. Which is the most reliable and accurate method in order to measure primary stability at the time of implant placement?
   a. Implant stability quotient
   b. Removal torque
   c. Periotest
   d. Insertion torque
   e. all the above

119. Which is the minimum torque value required to load a single-tooth implant?
   a. 20-25 N/cm
   b. 30-35 N/cm
   c. 40-45 N/cm
   d. 50-55 N/cm

120. When evaluating, diagnosing and resolving esthetic problems in the anterior segment, the following criteria are correct during the evaluation of the upper and lower lip lines, except one. Which of the following is the exception?
   a. The upper lip line serves to determine the length of the maxillary incisors during smile and rest position.
   b. The vertical position of the gingival margins in the maxillary arch during smile is determined relative to the upper lip line.
   c. The buccolingual position of the incisal edge of maxillary incisors is determined by the position of the lower lip line.
   d. The curvature of the incisal plane is related to the upper lip line but not to the lower lip line.
121. According to the 1997 article by Keltjens et al, which two independent variables, from their logistic regression analysis, demonstrated a significant influence on the fit of RPD clasps?
   a. Type of clasp & type of jaw
   b. Type of abutment & opposing dentition
   c. Type of RPD & type of clasp
   d. Age of RPD & opposing dentition
   e. Type of jaw & age of RPD

122. An increase in the relative saturation of color results in an increase in:
   a. Brightness.
   b. Hue.
   c. Value.
   d. Chroma.
   e. Darkness.

123. Which hard tissue augmentation technique is the most successful in furnishing bony support for implant placement?
   a. Long term success/survival of implants placed in maxillary sinus augmented bone, regardless of graft material(s) used, appear to be similar to or better than that of implants placed using conventional protocol with no grafting procedure.
   b. Implant survival rates in maxillary sinus grafts are poorly documented.
   c. Most of alveolar ridge augmentation techniques have detailed documentation and long term follow up studies, so there is no need to have further in-depth, multicenter, long term studies in this subject.
   d. Vertical augmentation can predictably generate new bone to successfully support dental implants.

124. All of the following statements are true regarding the variables which may contribute to soldering accuracy in dentistry except one. Which one is the **exception**?
   a. Gap width is an important soldering parameter from both an accuracy and strength perspective
   b. Efficient heating and rapid soldering minimizes porosity and distortion, whereas repeated heating leads to greater distortion
   c. The shrinkage of solder must be compensated for by the setting and thermal expansion of the investment
   d. If proper techniques and materials are used, soldering can completely eliminate misfit of multi-unit FPDs

125. All of the following statements regarding carries are true except one. Which one is the **exception**?
   a. Mutans streptococci and lactobacilli either separately or together, are the primary causative agents of dental carries.
   b. Occlusal surfaces of molars have the highest caries risk and the lingual surfaces of mandibular anteriors have the lowest caries risk.
   c. The critical pH of enamel has been estimated to be in the 5 to 6 range with an average of 5.5 being the generally accepted value.
   d. Caries lesions can theoretically become arrested at any stage of the caries process.
   e. Fluoride is most effective in inhibiting lesion progression and much less effective in inhibiting the initiation of caries.
126. In restoring posterior dentition, which of the following is true?
   a. Bilateral distal extension removable partial dentures will restore masticatory efficiency akin to a shortened dental arch, regardless of functional pairs
   b. Occlusal force and amount of occlusal contact area of post-canine teeth are major factors in determining masticatory function
   c. Patients cannot adapt to being restored to a shortened dental arch
   d. In a patient who still has all premolar pairs, restoration with a distal extension RPD will improve masticatory function
   e. There is no correlation between functional premolar/molar pairs and masticatory performance

127. In a study conducted to evaluate the clinical performance of RPD with I-bar retainers:
   a. Insufficient reduction of the marginal ridge for the occlusal rest, resulted in distortion of the clasp assembly
   b. Retention of the RPD was severely compromised when the I-bar was not in contact with the tooth
   c. Patients maintained adequate to good oral hygiene
   d. I-bar retainer was frequently found not to be in contact with the tooth
   e. All of the above statements are conclusions of the study

128. Of the factors affecting enamel and ceramic wear, all of the following are true except one. Which one is the exception?
   a. Internal porosity and other surface defects are produced by an inadequate firing technique.
   b. Glazing and/or polishing ceramics does not influence the early stage of the wear process.
   c. Sliding contacts in centric and eccentric movements does affect wear.
   d. Internal characterization of ceramics is recommended because extrinsic staining materials contain abrasive metal oxides.

129. Which of the following is a correct description of a palatal throat form, according to House’s classification?
   a. Class 2: medium in size, normal in form, with a relatively immovable resilient band of tissue 3-5mm distal to a line drawn across the distal edge of the tuberosities
   b. Class 1: Usually a small maxilla. The soft tissue turns down abruptly 3-5mm anterior to a line drawn across the palate at the distal edge of the tuberosities
   c. Class 3: Large and normal in form, with relatively immovable band of resilient tissue 5-12mm, distal to a line drawn across the distal edge of the tuberosities

130. The most effective method of enhancing resistance form in a metal ceramic tooth preparation that lacks resistance is:
   a. Decrease the total occlusal convergence of the cervical portion of the prepared axial walls.
   b. Prepare an occlusal isthmus 1 mm deep and 1.5 mm wide.
   c. Increase the total occlusal convergence.
   d. Use of resin cement.
131. Which of the following statements is (are) true?
   a. 76% of the rest contact the intended surfaces.
   b. There is clinical evidence that the rest directs occlusal forces and prevent “orthodontic” movement of abutment teeth.
   c. Suprabulge surface of a tooth can serve to support a framework provided three points of suprabulge contact are present.
   d. The average space between the rest and the prepared rest seat was greater in tooth-tissue frameworks.
   e. 7% of the occlusal rests contact only in the periphery of the prepared rest seat.
      a. 1 & 2
      b. 1, 3 & 5
      c. 3 & 5
      d. 3, 4 & 5
      e. none of the above

132. It becomes more difficult to obtain bilateral balance in a complete denture set-up when:
   a. There is a shallow horizontal condylar inclination.
   b. There is a steep horizontal condylar inclination.
   c. There is a steep plane of occlusion.
   d. There is a prominent compensating curve.
   e. There is a steep cuspal inclination in the posterior teeth.

133. Which muscle ends in a tendon which winds around the pterygoid hamulus?
   a. Levator veli palatini
   b. Palatopharygeus
   c. Tensor veli palatini
   d. Medial Pterygoid
   e. Lateral Pterygoid

134. Initiation of the gag reflex is caused by stimulation of all the following cranial nerves except one. Which one is the exception?
   a. V
   b. IX
   c. X
   d. XII

135. In fixed partial dentures, the combined pericemental area of the abutment teeth should be:
   a. At least 1/3 of the tooth or teeth to be replaced.
   b. At least 2/3 of the tooth or teeth to be replaced.
   c. Equal to, or greater than the tooth, or teeth to be replaced.
   d. None of the above.
136. When identifying dental implants radiographically, an important characteristic for identification is thread design. What type of thread design is shown below?
   a. Reverse Buttress
   b. V-Shape
   c. Square
   d. Buttress

137. How many millimeters of minimum vertical space is necessary to restore an edentulous mandible with a fixed-detachable, metal-resin, implant-supported prosthesis to provide adequate room for restorative materials?
   a. 3-5mm
   b. 6-8mm
   c. 9-11mm
   d. 12-15mm
   e. 16mm and above

138. What do occlusal records used for the functionally generated path technique represent?
   a. The movement of the condyles
   b. A "Gothic arch" or arrow point design made by the excursions of a maxillary stamp cusp
   c. Pathways of the opposing cusps within the border movements of the mandible
   d. Pathways of the cusps to be restored

139. What is the principle challenge when using osseointegrated implants in fibula free flaps?
   a. Soft tissue hypertrophy
   b. Proper position and angulation
   c. Decreased survival rates
   d. Initial anchorage and stability
140. Osteonecrosis of the jaw is associated with all of the following etiopathogenic factors except one. Which one is the exception?
   a. Use of systemic medications
   b. Radiation
   c. Xerostomia
   d. Direct chemical toxicity
   e. Trauma.

141. Each of the factors listed below primarily determine the prosthodontic prognosis for conventional complete dentures in patients having undergone a mandibular resection, except one? Which one is the exception?
   a. Extent/location of the bony and soft tissue resection
   b. Mobility and bulk of the tongue
   c. Mandibular deviation
   d. Complete denture occlusal morphology

142. When establishing anterior esthetics, the Golden Proportion ratio is often used. According to this theory, the exact proportion between the central and lateral incisor is:
   a. 1 : 1.5
   b. 1.618 : 1
   c. 1.25 : 0.75
   d. 1.333 : 1

143. Which of the following components of composite resin matrix shrinks the least?
   a. Bis-GMA
   b. TEGDMA
   c. Silorane
   d. Ormocers

144. In implant dentistry, which statement below best describes the term “Preload”?
   a. The contact force clamping together an implant and implant abutment
   b. The amount of torque, expressed in Ncm, delivered to a screw
   c. The force transmitted to an implant during occlusal function
   d. The torque, expressed in Ncm, required for a screw to become loose

145. What is the term that describes early wound healing around endosseous implants that involves phenotypic conversion of mesenchymal cells into bone-forming cells?
   a. Osseoinduction.
   b. Osseoconduction.
   c. Appositional bone growth.
   d. Contact osteogenesis.

146. Which dimension of color is probably the most important in shade matching?
   a. Hue.
   b. Value.
   c. Chroma.
   d. Saturation.
   e. Intensity.
147. All of the following are superficial muscles of facial expression except one. Which one is the exception?
   a. Buccinators
   b. Masseter
   c. Levator anguli oris
   d. Mentalis
   e. Zygomaticus major.

148. Methods used to create adequate quantity of bone for implant placements include each of the following except one. Which one is the exception?
   a. Cortical plate expansion
   b. Lengthening the implant integration time
   c. Sinus augmentation
   d. Distraction osteogenesis

149. During implant surgery it is important to use profuse irrigation, light pressure and sharp drills to ensure that the temperature of the bone does not exceed:
   a. 37°C for 10 minutes.
   b. 44°C for 5 minutes.
   c. 44°C for 1 minute.
   d. 47°C for 5 minutes.
   e. 47°C for 1 minute.

150. The prolonged use of antihistamines may produce xerostomia. This results from their:
   a. Anticholinergic action.
   b. Cholingergic action.
   c. Inhibition of histamine-induced salivation.
   d. Direct depression of salivary gland cells.