



School of Dentistry  
Department of Restorative Dentistry

-8  
69/77

RESTORATIVE DENTISTRY V (D553)  
**Final Examination**  
December 18, 2008

TEST CODE 01

INSTRUCTIONS

- Verify that you have an examination booklet with six pages and seventy-seven questions.
- Write your name on the computer answer sheet, as well as a nine digit personal identification number of your choosing in the field labeled "social security number", and blacken the appropriate circles with a #2 pencil.  
*Note: Test scores will be posted by PINs.*
- Sign and date the back of the computer answer sheet.
- **IMPORTANT!** Write the Test Code Number (above) on the computer answer sheet in the "Test Code" field under "Optional Codes", and blacken the appropriate circles.
- For each question answered, blacken the appropriate circle on the computer answer sheet corresponding to the letter of your choice.
- Students are not permitted to ask questions of the proctors during the examination. Do your best to answer each question with the information provided.
- When you have completed the examination, turn in your computer answer sheet. You may keep the question booklet.

*This exam consists five groups of questions that are based on individual patient profiles. For each case presented, the first set of true/false type questions tests factual knowledge relevant to the patient profile. The second set of multiple-choice questions tests reasoning skills related to decision-making for the case. Every question has a value of one point.*

# **Patient Profile #1**

19-year-old male with unremarkable medical history

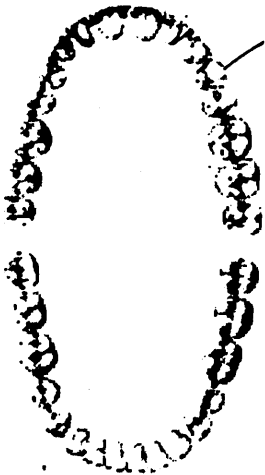
Missing teeth: none

S: broke upper left tooth while chewing ice; moderate throbbing pain that requires analgesic to control

O: no existing restorations or detectable caries lesions; Bu cusp missing from tooth #12, fracture of the facial surface extends to free gingival margin, pulp exposed; Angle Class I occlusion with bilateral canine guidance, no obvious attrition.

A: fractured tooth and irreversible pulpitis #12; localized gingivitis

P: RCT #12; prophylaxis; post/core and PFM crown #12



For each of the following questions, indicate whether the statement is true (A) or false (B).

1. The principle reason for using a post for the restoration of tooth #12 is to strengthen the tooth, and thereby reduce the risk of root fracture. **B** *inc crown retention probn.*
2. During the fabrication of the metal substructure for PFM crown #12 using the lost wax method, most of the positive dimensional change (expansion) would occur during the investment/burnout phase. **A** *casting*
3. The lost-wax method is so precise that it is possible to fabricate a metal substructure for the PFM crown with a marginal discrepancy (gap) less than 50 microns. **A** *~54 .05% = .005mm*
4. Considering all the steps in the process of making a PFM crown for tooth #12, the first important quality control evaluation would occur when the raw metal casting is inspected on the stone die. **B** *is check completeness impression*
5. Of all the final luting cements that could be used to install the PFM crown, the one class that has the most applications in restorative dentistry, and therefore is most versatile, is the resin cements. **A** *en P04*
6. A component that the polycarboxylate and glass ionomer cements have in common is silicate glass. **B**
7. Cements that set by an acid/base reaction would be contraindicated for the installation of the cast post/core. **B**
8. If the patient's natural teeth exhibit shades in the VITA A family, their hue may correctly be described as "reddish-brown". **A**

*B yellow  
C grey  
D pink*

For each of the following questions, choose one of these responses:

A= The STATEMENT is true and the REASON is true

B= The STATEMENT is true, but the REASON is false

C= The STATEMENT is false

9. STATEMENT: Die relief should be used on the stone die for crown #12 before applying separating agent (die lube). **T**  
REASON: Die relief creates a minute space for luting cement, which permits optimal seating of the crown during final installation. **A**
10. STATEMENT: Full-arch casts may be mounted on a semi-adjustable articulator by "hand articulation" to fabricate the crown for tooth #12. **T** *fully dentulous*  
REASON: A tripod of vertical stops and horizontal stability exist in this case. **T**
11. STATEMENT: Zinc phosphate cement would be useful for the final installation of the PFM crown. **T**  
REASON: Zinc phosphate produces a significant adhesive bond between metal and dentin. **B**
12. STATEMENT: Prior to preparing tooth #12 for a crown, the gingival unit must be examined and the depth of the crevice must be measured. **T**  
REASON: The location and design of the facial margin of the crown would be determined, in part, by the architecture of the gingival tissue in that area. **T**
13. STATEMENT: When choosing the porcelain shades for crown #12, it would be useful to drape the patient's neck with a medium blue napkin. **T**  
REASON: Gazing occasionally at a blue background improves the visual response to the complementary orange/yellow tones typically found in teeth. **A**
14. STATEMENT: Choosing a self-adhesive resin cement for crown #12 instead of a traditional composite resin cement would simplify the final installation process. **T**  
REASON: The new self-adhesive resin cements have eliminated the etch-rinse-blot step and do not require the application of a separate bonding agent. **A**
15. STATEMENT: The PFM crown for tooth #12 should be designed so that a marginal seal (ferrule) exists on tooth structure apical to the margin of the core build-up. **T**  
REASON: The direct fabrication technique for a cast post/core using Duralay routinely produces marginal gaps that are equal to those produced using the lost wax method. **B**
16. STATEMENT: The absence of detectable caries lesions, regardless of other findings, automatically signifies low caries risk. **F**  
REASON: Incipient active caries lesions often go unnoticed because of the low sensitivity of most detection methods. **C**
17. STATEMENT: A "triple tray" would be useful for the final impression of tooth #12. **T**  
REASON: Casts produced from triple tray impressions usually permit the most accurate simulation of lateral excursive movements on an articulator. **B** *quadrant*

## Patient Profile #2

44-year-old female, hypertension controlled by medication

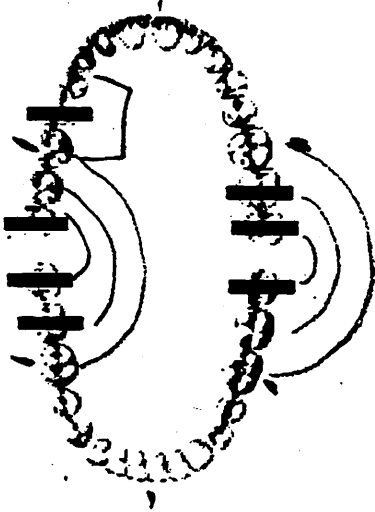
Missing teeth: #1, 4, 15, 16, 17, 31, 32

S: would like to replace missing upper right tooth

O: numerous amalgam and RBC restorations, some failing; several new proximal caries lesions, including recurrent; few periodontal pocket measurements of 4-5 mm, mainly molar regions; moderate wear of all cusps and incisal edges

A: dental caries; defective restorations; missing teeth; localized mild chronic periodontitis; bruxism

P: scaling and root planing; replace several direct restorations; 3-unit PFM bridge #3-5;



have to  
articulate  
up 15/17

For each of the following questions, indicate whether the statement is true (A) or false (B).

18. If posterior segmental occlusal registrations were to be used during the fabrication of the FPD #3-5 to help mount the mandibular cast against the maxillary master cast on an articulator, a rigid-setting material (e.g., Duralay, Blu-Mousse) would be indicated in the right posterior area. **A**
19. One benefit of placing the margins of abutment crowns #3 and #5 at least 1 mm into the gingival crevice would be a significant reduction in the risk of secondary caries. **B**
20. When preparing the 2-piece metal substructure for a soldered connector (fixed prosthesis #3-5), one should create two opposing flattened surfaces that are separated, prior to indexing, by a narrow uniform gap. **A**
21. A potential source of error in the solder indexing process for the metal substructure of the 3-unit fixed prosthesis is distortion from the setting expansion of the Duralay material. **B**
22. The ability to cut and rejoin segments of a metal FPD substructure represents an advantage of the PFM technique over all-ceramic technology. **A**
23. Since the patient's permanent dentition is fully developed, she would experience neither an appreciable benefit nor an appreciable risk from fluoride in drinking water. **B**

For each of the following questions, choose one of these responses:

A= The STATEMENT is true and the REASON is true

B= The STATEMENT is true, but the REASON is false

C= The STATEMENT is false

24. STATEMENT: When using the VITA guide to determine porcelain shades for the FPD #3-5, one should choose the predominant hue by studying the cervical third of the neighboring teeth. **T**  
REASON: Natural teeth typically exhibit the lowest chroma and highest value in the cervical third. **F** **↑**
25. STATEMENT: If full-arch casts were mounted on a semi-adjustable articulator to fabricate the FPD #3-5, they could be mounted in MIP by "hand articulation". **F**  
REASON: A tripod of stable centric contacts exists in this case. **F**
26. STATEMENT: It would be medically and ethically appropriate to delay prosthodontic treatment for this patient until disease prevention measures are instituted. **T**  
REASON: The patient exhibits evidence of high caries risk, which means the longevity of the new prosthesis, as well as the other restorations, could be adversely affected. **T**
27. STATEMENT: A metal collar at the margins of each bridge abutment crown would contribute to the durability of the prosthesis by stiffening the substructure. **T**  
REASON: Flexure of a metal substructure would lead to porcelain fracture due to the low modulus of elasticity of ceramic materials. **F**
28. STATEMENT: A PFM fixed prosthesis with static occlusal contacts on metal would have some significant benefits, and this option should be discussed with the patient. **T**  
REASON: The patient's parafunctional habit may increase the risk of attrition of the opposing teeth if porcelain occlusal surfaces were used. **T**
29. STATEMENT: If abutment crown #3 seats accurately in the patient's mouth during the initial metal try-in, but crown #5 does not, the best option is to make a new impression that captures both abutments and fabricate a completely new 3-unit metal substructure. **F**  
REASON: It would be impossible to realign the abutment crowns on a single master cast if only crown #5 is re-made. **F**
30. STATEMENT: When choosing the porcelain shades for the FPD #3-5, the teeth and shade guide should be viewed in several different light sources. **T**  
REASON: Metamerism may affect the esthetic outcome. **T**
31. STATEMENT: All teeth with detectable E2 caries lesions should be restored. **F**  
REASON: The probability of surface cavitation of E2 lesions is about 50%, as determined by Pitts and Rimmer. **T**
32. STATEMENT: Proximal caries lesions that are not cavitated should be managed medically, not surgically. **T**  
REASON: For many dental patients a minimally invasive treatment approach reduces morbidity (loss of form, function, comfort, etc.) over a lifetime. **T**

### Patient Profile #3

57-year-old insulin-dependant male

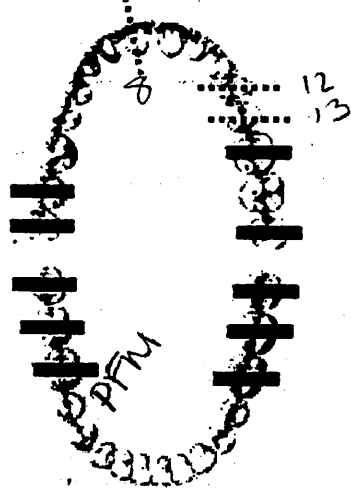
Missing teeth: #1, 2, 14, 16, 17, 18, 19, 30, 31, 32

S: broken front tooth; painful teeth upper left side; all missing teeth lost 10+ years ago

O: Tooth #8 fractured off below the gingival margin, PA radiolucency; Teeth #12 & 13 have large (D3) caries lesions that have invaded the biologic width; the buccal cusp of tooth #29 is missing (fractured off); several other teeth have E2/D1 lesions; few areas of alveolar bone loss 1-3 mm; CRT *bacteria* MS=250,000 cfu/ml

A: dental caries; dental fractures; localized mild chronic periodontitis; partial dentition

P: extractions; scaling and root planing; restoration of individual teeth; PFM crown #29; replacement of one or more missing teeth



For each of the following questions, indicate whether the statement is true (A) or false (B).

33. Elimination of the active caries lesions by restoring the affected teeth will lower his caries risk to a safe level. **F**

34. The CRT *bacteria* mutans streptococci value is consistent with a diagnosis of high caries risk. **F**

35. If a total-etch adhesive system were used according to the manufacturer's instructions in the restoration of his carious teeth, a collagen-resin hybrid layer would be produced that would contribute significantly to the dentin bond. **A**

36. If a mandibular RPD were to be fabricated, the primary reason for making a functional impression of the posterior ridges for the altered cast procedure would be to reduce the risk of occlusal interferences in the completed prosthesis. **B**

37. When selecting the porcelain shades for crown #29, it would be advisable to choose the color family (hue) before identifying the value. **T**

38. If teeth #s 8, 12 and 13 were to be extracted and a RPD recommended for the maxillary arch, there would be no advantage of replacing tooth #8 with a crown on an implant. **B** *esthetics*

39. If teeth #s 12 and 13 were to be extracted, any reasonable fixed prosthodontic option for the maxillary left quadrant would require implants. **A**

For each of the following questions, choose one of these responses:

A= The STATEMENT is true and the REASON is true

B= The STATEMENT is true, but the REASON is false

C= The STATEMENT is false

40. STATEMENT: If a conventional mandibular RPD is made to replace the missing mandibular posterior teeth, irreversible hydrocolloid (alginate) would be an acceptable material to make an impression for the fabrication of the cast metal framework. **T**  
REASON: Alginate is dimensionally stable due to its excellent resistance to syneresis and imbibition. **F**

41. STATEMENT: If a mandibular RPD were made for this patient, he would benefit from being recalled for examination at shorter intervals than other patients who do not have prostheses. **T**  
REASON: The findings of available clinical studies suggest that wearing conventional RPDs is associated with an increased risk of developing caries lesions and losing residual ridge bone. **T**

42. STATEMENT: It can be predicted with a very high level of confidence that this patient would faithfully wear a mandibular RPD if it were fabricated according to accepted technical standards. **C**  
REASON: Studies of masticatory ability reveal that people who are missing their molars usually complain that they have a great deal of trouble chewing their food. **F**

43. STATEMENT: A reasonable treatment option would be to fabricate a maxillary RPD and to maintain all of the remaining mandibular teeth without replacing the missing molars. **T**  
REASON: The professional consensus reported in the literature is that patients with about 20 teeth (natural and prosthetic), including several pairs of occluding posterior teeth, usually report satisfactory chewing ability and trouble-free eating. **T**

44. STATEMENT: If a conventional clasp-retained mandibular RPD were planned for this patient, a "triple-tray" impression procedure would *not* be a good option for creating a master cast and die for tooth #29. **A**  
REASON: A wax pattern for an abutment crown cannot be surveyed correctly on a stone cast made from a quadrant impression. **T**

45. STATEMENT: This patient may experience an oral health benefit from a 2-3 week course of chlorhexidine gluconate mouthrinse followed by extended use of xylitol gum or mints. **T**  
REASON: The growth and viability of Mutans streptococci are inhibited by chlorhexidine and xylitol. **T**

46. STATEMENT: If the fracture of tooth #8 extends to the alveolar crest, crown-lengthening surgery is indicated. **C**  
REASON: Margins of restorations placed within the biologic width act as foreign bodies that prevent normal healing of the gingival attachment. **T**

47. STATEMENT: Over-eruption of teeth may be a possible complication in the prosthodontic treatment of this patient. **T**  
REASON: Clinical studies have consistently proven that molars that lose their antagonists in the opposite arch will over-erupt at a predictable and consistent rate. **F**

#### Patient Profile #4

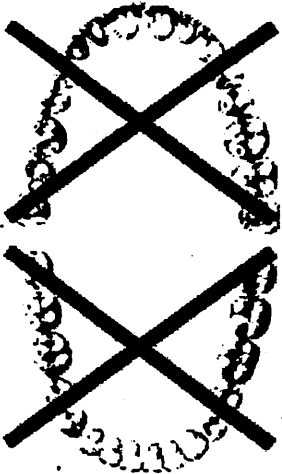
68-year-old male, hypertension and high cholesterol managed with medication; totally edentulous

S: loose dentures with worn and broken teeth, 15+ years old; lower denture a little sore; patient had at least one previous set of complete dentures in last 30 years

O: atrophic mandibular ridge; 2 small red/white lesions in the mandibular vestibule; diffuse red papillary lesion of the hard palate

A: mild inflammatory papillary hyperplasia; traumatic ulcers; defective complete prostheses

P: new complete dentures



For each of the following questions, indicate whether the statement is true (A) or false (B).

48. Research that attempts to gauge acceptance of treatment outcomes indicates that elderly experienced denture wearers (such as this patient) are more likely to accept functional limitations from their dental prostheses compared to younger first-time denture wearers. **T**

49. When evaluating the trial wax dentures, the vertical dimension of occlusion should be verified by observing the closest speaking space when the patient produces sibilant sounds. **T**

50. By definition, closest speaking space is synonymous with freeway space. **F**

51. The "sore" spots (traumatic ulcers) are definite evidence that the borders of the mandibular denture are overextended. **F**

52. If bilateral bony undercuts are observed in the area of the tuberosities, the denture base should extend into the undercuts in order to maximize the retention of the prosthesis. **F**

53. The primary reason for observing "F" and "V" sounds during the complete denture wax try-in visit would be to help evaluate the length of the maxillary incisors. **T**

54. The etiology of residual ridge resorption is multifactorial, but little is known about which factors are dominant. **T**

55. Establishing balanced occlusion (bilateral contacts in lateral excursion, posterior contact in protrusion) is recommended to provide optimal stability of the new dentures. **T**

For each of the following questions, choose one of these responses:

A= The STATEMENT is true and the REASON is true

B= The STATEMENT is true, but the REASON is false

C= The STATEMENT is false

56. STATEMENT: The posterior border of the new maxillary complete denture should end at the junction of the hard and soft palates. **F**  
REASON: Retention of the complete denture is dependent on a firm peripheral seal that prevents air leakage under the denture base.

57. STATEMENT: Prior to making preliminary impressions for new dentures, a series of resilient liners may be used in the existing maxillary denture. **X**  
REASON: Mechanical irritation from an ill-fitting denture is the sole cause of inflammatory hyperplasia. **F**

58. STATEMENT: If properly designed, the new dentures should provide a vertical dimension of occlusion that is equal to the vertical dimension at rest. **F**  
REASON: Periods of mandibular relaxation remove the occlusal load from the residual ridges and reduce the potential for bone resorption.

59. STATEMENT: Prior to border molding, the peripheral flanges of the custom edentulous impression trays must be assessed in the mouth by activating the surrounding musculature and inspecting for proper relief. **T**  
REASON: Casts fabricated from preliminary alginate impressions are usually underextended in the vestibular folds. **F**

60. STATEMENT: When modifying the maxillary master cast for the posterior palatal seal, the deepest penetration (2 mm) will be made immediately posterior to the tuberosities. **F**  
REASON: The most depressible soft tissue along the posterior border of the maxillary denture is located in the hamular notches.

61. STATEMENT: The stomatitis observed in the palatal area must be resolved before fabricating the new denture. **T**  
REASON: Inflammatory hyperplasia is a very painful condition, and it would persist under the new denture. **F**

62. STATEMENT: When making a new centric relation record with softened Aluwax to verify the mounting of trial wax dentures on the articulator, the patient should stop slightly short of full closure. **T**  
REASON: Bringing the teeth into full contact may cause the mandible to deviate from its normal path of closure if the centric relation occlusion of the trial dentures is not correct. **T**

63. STATEMENT: The stomatitis should be managed, in part, by promoting effective oral hygiene and thorough cleaning of the present denture. **T**  
REASON: Microorganisms have been implicated in the etiology of the disease. **T** *Candida*

64. STATEMENT: Replacing the dentures is likely to markedly improve this patient's diet and nutrition. **T**  
REASON: The masticatory performance of a patient who wears high quality conventional complete dentures is about 98% of the performance of a young dentate individual. **F** *25%*

**Patient Profile #5**

61-year-old female

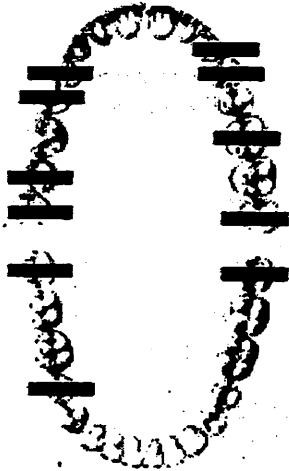
Missing teeth: #1, 2, 4, 5, 11, 12, 14, 16, 17, 28, 32

S: Sales clerk at local department store complains of loose upper front teeth with spaces that have gotten larger recently; old upper plate (RPD) doesn't fit; mouth odor; tooth #29 extracted 30 years ago

O: 6-8 mm periodontal pockets around all remaining maxillary teeth with Class 2-3 mobility; 3-5 mm periodontal probing depths in the mandible; no detectable caries lesions

A: severe chronic periodontitis of the maxilla; mild chronic periodontitis of the mandible; defective maxillary prosthesis; malocclusion

P: extractions; scaling and root planing; maxillary removable prosthesis



For each of the following questions, indicate whether the statement is true (A) or false (B).

65. If the "combination" impression method were used during the fabrication of an immediate maxillary complete denture, a stock metal tray could be used with alginate for the second impression. *1st = PS for ridge 2nd teeth*

66. A surgical template would facilitate the delivery of an immediate maxillary complete denture by guiding the proper contouring of the anterior ridge following the removal of the natural teeth.

67. If all the remaining maxillary teeth were extracted, post-surgical bone remodeling would be complete and a stable ridge contour would be achieved in 2-3 months. *6-12 m F*

68. After accepting delivery of an immediate denture, the patient must wear the prosthesis continually for the first 24 hours.

69. The material of choice for the traditional (single tray) immediate denture impression technique is alginate.

70. If serial extractions are accomplished in two phases prior to delivery of an immediate maxillary denture, the waiting period after the initial surgical appointment should be 10-12 weeks. *6-8 wks F*

For each of the following questions, choose one of these responses:

A= The STATEMENT is true and the REASON is true

B= The STATEMENT is true, but the REASON is false

C= The STATEMENT is false

71. STATEMENT: Even if teeth #6-10 were extracted, the best prosthodontic option for the maxillary arch would be to retain teeth #3, 13 and 15 as abutments for a conventional RPD. *F*  
REASON: Surveys of complete denture wearers typically reveal a very low level of satisfaction with their maxillary prostheses.

72. STATEMENT: If the patient requests an immediate maxillary complete denture, a sensible option would be to extract teeth #s 3, 13 and 15 immediately, and then extract teeth #s 6, 7, 8, 9, and 10 when the denture is inserted. *T*  
REASON: Removing the posterior teeth would permit a wax try-in of the posterior denture tooth set-up to confirm the accuracy of the initial centric relation record. *X*

73. STATEMENT: The overall costs of an immediate denture would be greater than a conventional denture. *T*  
REASON: An immediate denture requires more frequent visits for adjustment and relining, and usually must be replaced much sooner than a conventional denture. *X*

74. STATEMENT: This patient is a good candidate for a maxillary overdenture, which is fabricated over 2-4 retained endodontically treated roots. *F*  
REASON: Retaining roots helps preserve alveolar bone. *T*

75. STATEMENT: Compromised anterior esthetics would be a likely disadvantage of an immediate denture in this case. *T*  
REASON: Positioning of the five anterior denture teeth could only be estimated because a wax try-in of those teeth is not possible. *T*

76. STATEMENT: Instability and compromised retention would be possible outcomes of immediate denture treatment in this case. *T*  
REASON: It would be difficult to achieve an optimal balanced occlusion with the mandibular natural teeth. *B*

77. STATEMENT: My New Year's resolution is to lose weight and buy (and faithfully read) the Restorative Dentistry VI course pack. *X*  
REASON: When it comes to my body and mind... no pain, no gain!

BEST WISHES FOR A RESTFUL HOLIDAY