RESTORATIVE DENTISTRY D260
PROGRESS EXAMINATION #1
February 15, 2005

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NAME [redacted]

PRECLINICAL SEAT NUMBER [redacted]

EXAMINATION NUMBER: [redacted] B

1. Please read all directions before starting the examination.

2. Excluding this page, your examination booklet should contain 7 pages with a total of 79 questions. Please check to verify you have all of the examination.

3. Write your name and preclinical seat number on the cover of the examination booklet and on the short answer page.

4. Write your name, social security number and exam number and letter on the computerized answer sheet in the appropriate boxes. Blacken the corresponding letters and digits below the boxes.

5. On the reverse side of the computerized answer sheet sign your name and write the number and letter (A or B) of your test booklet in the box labeled identification information.

6. Be sure to darken all circles on the answer sheet before the end of the examination. Extra time will not be given at the end of the examination for this purpose.

7. No questions will be answered during the examination. Answer each question as best you can using the information available.

8. Return the computerized answer form AND the entire examination booklet to the proctor.

1. Which of the following clinical situations involving direct pulp capping would be the most likely to be successful?
   a. A pin-point exposure having sound dentin on the periphery of the exposure, with a mild degree of pulpal inflammation restricted to the exposure site. Poor isolation using cotton roles.
   b. A carious exposure having decayed or infected carious dentin at its periphery, inflammation in the pulpal tissues beyond the exposure site. Isolation using rubber dam.
   c. A pin-point exposure having sound dentin on the periphery of the exposure, with no pulpal inflammation at the exposure site. Isolation using rubber dam.
   d. An exposure with profuse hemorrhage and great involvement (mechanical) of the pulpal and root tissues.

2. When placing pins to enhance retention form of a prepared cavity, which of the following potential pin sites should be avoided?
   a. the mid-buccal area of the mandibular first molar
   b. the mid-mesial area of the maxillary first premolar
   c. the mid mesial area of the maxillary first molar
   d. two of the above
   e. all of the above

3. Which of the following promote microleakage of amalgam?
   1. the micron-size gap that exists between the amalgam and tooth structure
   2. amalgam's lower coefficient of thermal expansion compared to that of tooth structure
   3. using poor condensation technique
   4. a lack of corrosion by-products necessary to seal the margins

   a. all of the above b. 1, 2 and 3 c. 1, 3 and 4 d. 2, 3 and 4

4. Triturating amalgam longer than is recommended:
   a. produces a mix that is warm and has a dull surface
   b. increases its setting time
   c. increases its compressive strength if it is a single-composition-spherical amalgam
   d. all of the above
   e. none of the above

A

5. The addition of copper to amalgam increases strength, reduces tarnish and corrosion, and reduces creep and, therefore marginal deterioration; Copper accomplishes these effects by tying up tin, preventing the formation of gamma 2, the weakest, most tarnish and corrosion prone phase and the phase with the highest creep values.
   a. Both statements are true c. Statement one is true and statement two is false
   b. Both statement are false d. Statement one is false and statement two is true.

B

6. _____ is defined as the amount of time from the start of mixing until the material becomes so thick that it can no longer be manipulated
   a. setting time b. working time c. mixing time

7. According to material presented in the required reading, purported advantages of amalgam bonding include which of the following:
   1. increased retention of amalgam restorations
   2. reduction/prevention of post-placement leakage
   3. reduction/prevention of post-placement sensitivity
   4. reinforce remaining tooth structure

   a. all of the above b. 1, 2 and 3 only c. 1, 3 and 4 only d. 2, 3 and 4 only

8. To remove demineralized dentin from a tooth with an extensive carious lesion, one would use
   a. a # 8 bur in the high speed handpiece c. a # 6 round bur in the low speed handpiece
   b. a # 330 bur in the high speed handpiece d. a # 34 bur in the low speed

9. According to material presented in the required reading, which of the following are reasons for being conservative in doing amalgam bonding?

a. bonding agents tend to be more expensive than cavity varnish
b. bonding is technique sensitive
c. long-term studies are lacking
(d) all of the above
e. two of the above

10. Hand instruments must be balanced to allow for the concentration of force onto the blade without causing rotation of the instrument in the grasp. This balance is accomplished by designing the angles of the shank so that the cutting edge of the blade lies within 1 -2 mm of the long axis of the handle.

(a) Both statements are true.
b. Both statements are false.
c. Statement one is true; statement two is false.
d. Statement one is false; statement two is true.

11. In a completed Class II cavity preparation for amalgam which of the following walls should remain in contact with the adjacent tooth.

a. incisal b. gingival c. facial d. lingual
(e) all walls should break contact with the adjacent tooth.

12. Contact areas between maxillary premolars are normally found on what portion of the proximal surface.

(a) facial half b. lingual half c. central part

13. The words "overcarved" and "undercarved", "overcontoured" and "undercontoured" are used frequently by your laboratory instructors. Some of them are included in the criteria for evaluation of the restorations done in your exercises and practical examinations. If a surface is overcarved, the surface is left

a. overcontoured (b) undercontoured c. also undercarved d. none of the above

14. A typical reinforced zinc oxide-eugenol cement such as IRM contains approximately 20% by weight of which of the following substances in the powder to give it increased strength and stiffness?

a. silica b. silane (c) poly methyl methacrylate d. eugenol

Items 15 to 23 are statements concerning the physical properties, setting reactions, and clinical use of dental materials as the affect their clinical use as bases, liners and varnishes. Using the choices below, match the restorative material to the correct statement. Answers may be used more than once or not at all.
Darken the appropriate circle on the computerized answer sheet.

a. calcium hydroxide (dycal)
b. IRM
c. Glass ionomer (traditional)
d. Zinc phosphate
e. Copal varnish

B 15. Is toxic if placed directly on the pulp due to the release of free eugenol
D 16. Sets by an exothermic reaction
A 17. Has a high PH (9.2 – 11.7)
B 18. Has a neutral PH (6.0 – 8.0), can also be described as obtundant
C 19. Has been shown to release fluoride
E 20. Usually applied with a cotton pellet, ideally two layers are placed
A 21. Is a low strength base and must be covered by a stronger base
C B 22. Chemically bonds to tooth structure
E 23. Used in a thin layer to reduce microleakage and post-op sensitivity around metallic restorations

24. Accurate diagnosis of occlusal caries has always been regarded as more difficult than the diagnosis of smooth-surface caries; clinicians have recently suggested that fluoride has slowed the progress of occlusal lesions and strengthened occlusal enamel, such that a sound enamel surface may mask relatively large dentinal caries that is discovered only on bite-wing radiographs.

A

a. Both statements are true.
b. Both statements are false.
c. Statement one is true; statement two is false.
d. Statement one is false; statement two is true.

25. Because of the superimposition of buccal and lingual enamel, caries of the occlusal enamel are not generally visible, and early dentinal involvement is difficult to ascertain with radiographs. However, the presence of visible cavitation of the enamel surface is, in most cases, synonymous with dentinal involvement.

A

a. Both statements are true.
b. Both statements are false.
c. Statement one is true; statement two is false.
d. Statement one is false; statement two is true.

26. The electrical conductivity of a tooth changes with demineralization, even when the surface remains apparently intact. Electrical conductance measurements make use of the decreased conductivity of carious enamel in pits and fissures.

C

a. Both statements are true.
b. Both statements are false.
c. Statement one is true; statement two is false.
d. Statement one is false; statement two is true.

27. Shi and others evaluated the DIAGNOdent system in vitro and discovered the device showed higher diagnostic accuracy in the detection of dentinal caries than enamel caries; suggesting that the DIAGNOdent values were dependent on the volume of the caries rather than on the depth of the lesion.

A

a. Both statements are true.
b. Both statements are false.
c. Statement one is true; statement two is false.
d. Statement one is false; statement two is true.

28. When restoring a Class II preparation with amalgam, the contact point should be restored much larger than it occurs naturally because it will

a. protect interseptal bone.
b. reduce plaque formation.
c. provide for tighter contact.
d. render the proximal surface of the adjacent tooth immune from future caries.
e. None of the above.

29. If in the preparation of a Class II cavity the pulpal wall is established perpendicular to the long axis of the tooth, the tooth *most* likely to have a pulp exposure is the

C

a. maxillary first premolar
b. maxillary second premolar
c. mandibular first premolar
d. mandibular first molar
e. None of the above. The likelihood of a pulp exposure is approximately the same for each tooth listed.

30. Non-supporting cusps in a human Class 1 occlusal relationship are:

D

a. the buccal cusps of the maxillary and mandibular arches
b. the buccal cusps of the mandibular arch and the lingual cusps of the maxillary arch
c. the incisal edges of the anterior teeth since they are involved in incisal function
d. the buccal cusps of the maxillary arch and lingual cusps of the mandibular arch
e. two of the above

31. The axiopulpal line angle is rounded in the # 3 OL and # 31 MO amalgam cavity preparations in order to

D

a. make placement of the amalgam easier
b. allow for easier access in restoring the box area
c. remove unsupported enamel
d. provide resistance form
e. provide retention form

32. Regarding a carbide bur, the number of cutting blades determines its cutting efficiency. Burs with a fewer number of cutting blades results in
   a. less efficient cutting and a smoother surface
   b. less efficient cutting and a rougher surface
   c. more efficient cutting and a smoother surface
   d. more efficient cutting and a rougher surface.

33. A carbide bur with a numerical code 1556 can be described as a(n)
   a. tapered fissure
   b. straight fissure
   c. round ended crosscut straight fissure
   d. end cutting bur
   e. round ended straight fissure

34. Fracture of a Class II dental amalgam restoration at the junction between the occlusal and proximal portions is the result of inadequate
   a. retention form
   b. resistance form.
   c. convenience form.
   d. extension for prevention.

35. In a Class II cavity prepared for dental amalgam, the facial and lingual proximal walls should be formed
   a. approximately parallel to each other
   b. at right angles to the gingival floor
   c. slightly diverging as the walls approach the proximal surface
   d. slightly diverging as the walls approach the occlusal surface

36. A dentist is preparing Tooth # 30 for an occlusal amalgam restoration. Once the ideal outline form and depth hav been established, the dentist notes that caries remains on the pulpal wall of the preparation. The next step in treatment is
   a. extend the outline form
   b. deepen the entire pulpal floor
   c. remove the caries with a large round bur on high speed
   d. remove the caries with a large round bur on slow speed

37. On a rubber-dam placement which isolated teeth 18 to 25, the dentist observed an unusual amount of wrinkling of the rubber dam between the teeth. This wrinkling is the result of
   a. punching the holes too small
   b. punching the holes too far apart
   c. punching the holes too close together
   d. crowding and overlapping of the anterior teeth
   e. teeth with broad contacts incisogingivally

38. The pins that offer the greatest degree of retention into dentin are
   a. self-threading
   b. friction lock
   c. cemented with glass ionomer cement
   d. cemented with zinc phosphate

According to material presented in lecture and Sturdevant, identify the following statements (questions 39 - 58) as true or false. Darken (a) on your answer sheet if the statement is true. Darken (b) on your answer sheet if the statement is false.

   a. True
   b. False

T 39. To ensure that maximum information is obtained during a visual examination for the presence of occlusal caries, the teeth should be clean, completely dry and well illuminated.

T 40. The anatomic wedge is preferred for deeply extended gingival margins because its greatest cross-sectional dimension is at its base.

T 41. When punching holes in the rubber dam, the distance between holes is equal to the distance from the center of one tooth to the center of the adjacent tooth, measured at the level of the gingival tissue.

T 42. When preparing a carious pit on the lingual surface of a maxillary central incisor the bur should be positioned so that it is perpendicular to the lingual surface of the tooth.

F 43. A tapered fissure bur can be described as a slightly tapered cone with the small end of the cone directed toward the bur shank.

44. Cutting instruments have formulas describing the dimensions and angles of the working end. The first number indicates the length of the blade in tenths of a millimeter.
45. Gingival Class II cavomargins ideally terminate gingival to both the contact and the lesion.
46. Inadequate isthmus width is the most likely cause for isthmus fracture of Class II amalgam.
47. Brittleness is the property of amalgam that makes it unsuitable for beveled margins.
48. According to material presented in lecture and the reading, when removing an old amalgam any base material found under the amalgam should be removed if the tooth was symptomatic preoperatively or there is evidence of decay.
49. Occasionally a pin may break during placement. According to material presented in lecture and the reading, the preferred treatment for a broken pin is removal of the pin and drilling a larger hole in the same location.
50. Base materials are needed under composite resin restorations to provide thermal insulation
51. The reaction that occurs in a mixture of zinc oxide and eugenol (IRM) is exothermic
52. The pH of hard-set calcium hydroxide is about 7 (neutral).
53. To prevent pooling of the varnish at the junction of the matrix band and proximal margins, application of cavity varnish prior to matrix application is preferable.
54. Crosscuts are needed on fissure burs to obtain adequate cutting effectiveness at low speeds, but at high speeds they are not needed.
55. According the required reading, the amount of gamma 2 present in low-copper and high-high copper amalgams is the same.
56. It is a good idea to use light intermittent pressure when polishing an amalgam restoration with a rubber cup to prevent excessive build-up of heat.
57. In a Class I amalgam cavity preparation retention form is provided by mesial and distal walls that diverge occlusally.
58. Root caries is usually more rapid than other forms of caries, and thus should be detected and treated early.

59. Materials contraindicated for placement under and in contact with composite resin include
1. varnish 2. calcium hydroxide 3. IRM 4. zinc phosphate cement 5. copalite

a. 1 and 3 (b.) 1, 3, and 5 c. 1, 2, 4 d. 1 and 3 e. 1 and 5

60. The best way to minimize microleakage after the insertion of a Class II dental amalgam restoration is to
a. use a triangular wedge to prevent gap formation along the gingival cavosurface margin
b. polish the restoration 24 hours after placement
c. properly mix multiple spills of amalgam to prevent "layering"
d. use heavier than usual condensation force
(e.) use a cavity varnish

61. Which of the following materials is most soluble in oral fluids?
a. glass ionomer (b.) dycal c. modified ZOE d. IRM

62. When placing a base on the pulpal floor, it is important to cover the entire floor of the preparation with the base; because it is better to have the base rather than dentin bear the compressive load of mastication
a. Both statements are true. c. Statement one is true and statement two is false.
(b.) Both statements are false. d. Statement one is false and statement two is true.

63. The main reason that zinc oxide-eugenol cannot be placed directly on the pulp is that
a. the pH remains too high for reparative dentin to form
b. the cement fails to harden sufficiently to support a final restoration
c. in high concentrations zinc is toxic to the pulpal tissues
(d.) in high concentrations eugenol is toxic to the pulpal tissues

64. For all practical purposes, in a mature adult tooth, the direction of the enamel prisms or rods are
a. obtuse to the enamel surface of the tooth
b. acute to the enamel surface of the tooth
(c.) at right angles to the enamel surface
d. parallel to the dentinoenamel junction
e. in random relation to the enamel surface

65. When applying a Tofflemire matrix band to a tooth with a Class II preparation, the edge of the band with the larger circumference is always oriented _____ and the open end of the U-shaped retainer head is always oriented _____
   a. occlusally, occlusally
   b. occlusally, gingivally
   c. gingivally, gingivally
   d. gingivally, occlusally

66. To increase the diameter of the matrix band, the operator should turn the _____ on the matrix retainer _____.
   a. adjusting nut; clockwise
   b. locking nut; counterclockwise
   c. adjusting nut; counterclockwise
   d. locking nut; clockwise

67. Dental burs are designed to cut when they rotate _____ (when viewed from the shank end of the bur).
   a. counterclockwise b. clockwise c. with even speed

68. The direction of retention pin holes should be
   a. parallel to the long axis of the tooth
   b. parallel to the nearest external surface
   c. at right angles to the dentinal tubules
   d. perpendicular to the occlusal or the gingival floor of the preparation
   e. at a 14 degree angle to the long axis of the tooth.

69. In a Class III lesion, the cones of decay at the DEJ are
   a. apex to base b. base to base c. apex to apex

70. Which of the following conclusions would be correct if, after six weeks, a pulp-capped tooth were asymptomatic?
   a. pulp capping was a success
   b. lack of adverse symptoms might be temporary
   c. reparative dentin formation at the exposure site was complete
   d. all decay was removed

Name: Preclinical seat number: E-7 Number incorrect: _____

Short Answer Questions: Each written answer is worth 2 points - 30 points total

71. If a small pulpal exposure occurs during cavity preparation and is not due to caries (mechanical pulp exposure), a layer of dycal can be placed over the exposure site to stimulate repairative dentin across the exposure site. This procedure is called pulp capping. direct

-2

72. Location of the gingival floor (clinically) must satisfy two criteria; these are

Break contact w/ adjacent tooth
extend into sound tooth structure (non carious area)

73. Name the hand instrument which can most effectively round the axiopulpal line angle and remove unsupported enamel rods at the gingival cavosurface margin of a Class II cavity prepared for amalgam . gingival margin trimmer

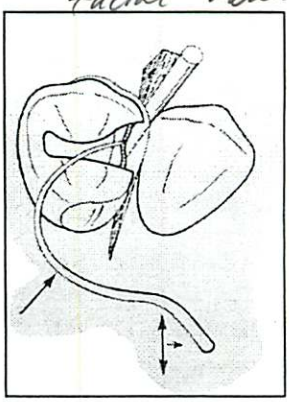
74. A Class II cavity preparation involving the mesial surface of a maxillary first premolar requires special attention because the mesiofacial embrasure is esthetically important. How should the facial wall of the mesial box be prepared (relative to the long axis of the tooth) to minimize an unesthetic display of amalgam in the faciogingival corner of the restoration.

.2 - .3 mm facial to contact to maintain asthetic look from facial view.

-2

75. After placing the Tofflemire matrix band for restoration of a Class 2 preparation, the operator should test with an explorer in a press-scrape motion along the gingival cavosurface margin (as shown). What is the purpose of this procedure?

check for gaps
remove trapped rubberdam or tissue
clean unsmoothed enamel

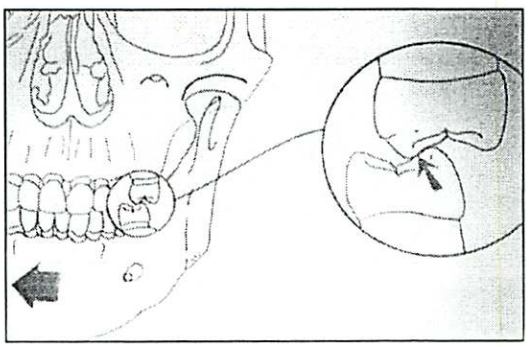


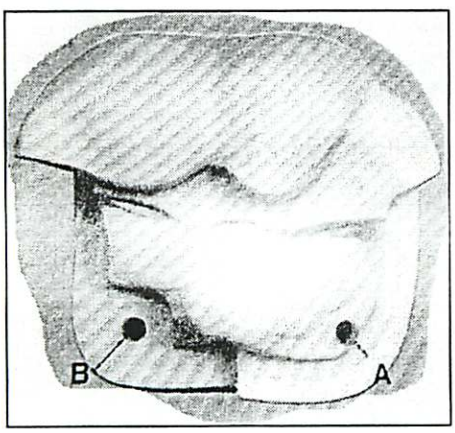
76. Explain the "rule of two's " as it applies to pin placement.

in two mm's from external surface of tooth
two mm's into dentin for stable retention
two mm's above pin for adequate material working space.

-2

77. The interference shown on the right is called a non-working interference





78. In the picture shown to the left, the pin hole shown in B is located 1.5 mm from the external surface of the tooth. (The location of the pinhole is below the CEJ)

79. The pin hole shown in A is located 1 mm from the DEJ.