RESTORATIVE DENTISTRY D260
PROGRESS EXAMINATION #1
February 15, 2011

CORRECTED

1. Please read all directions before starting the examination.
2. Your examination booklet should contain 6 pages. The exam contains 30 multiple choice questions and 20 short answer 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.
4. Write your name, your Temple ID number and the 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. 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.

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1. Reparative dentin is formed by replacement odontoblasts in response to moderate-level irritants. Reparative dentin causes a change in the composition of the primary dentin resulting in the peritubular dentin becoming wider, gradually filing the tubules with calcified material.

C

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

2. In cases of severe irritation, the pulp responds by an inflammatory reaction similar to that for any other soft tissue injury. The inflammation may become irreversible and can result in the death of the pulp because the confined, rigid structure of the dentin limits the inflammatory response and the ability of the pulp to recover.

A

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

3. Principles of cavity preparation are based on properties of the tooth and properties of the restorative material. Enamel is a very brittle structure having a high elastic modulus and a low tensile strength indicates it is a rigid structure.

A

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

4. Ideally, the oblique ridge of maxillary molars should be preserved during cavity preparation because it retains strength in the tooth. T
Cutting through the oblique ridge is indicated if it is undermined by decay or the pulpal floor depth exceeds 2.5 mm. F

C

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

5. The preferred cavosurface margin design for a Class I amalgam is the butt joint; because it provides resistance form for the amalgam restoration

A

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

6. 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

B

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

7. (According to material presented in the Sturdevant text.) Amalgam bonding systems may be used to seal underlying tooth structure and bond amalgam to enamel and dentin. Amalgam is strongly hydrophobic whereas enamel and dentin are hydrophilic.

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

8. 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

9. 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

10. According to the material presented in the Sturdevant text (p.859), remaining old restorative material on the internal walls of a preparation should be removed if which of the following condition(s) is (are) present:

1. The old material is judged to be thin, non-retentive or both.
2. There is evidence of caries under the material (radiographic and/or visual)
3. The pulp was asymptomatic preoperatively
4. The periphery of the remaining restorative material is intact

a. all of the above b. none of the above c. one of the above d. two of the above e. three of the above

11. According to material presented in the Sturdevant text (p 813), when caries is extensive, reduction of one or more of the cusps for capping may be indicated. Complex amalgam restorations with one or more capped cusps have documented longevity of _____ .

a. 44% after 5 years b. 50% after 9 years c. 62% after 12 years d. 72% after 15 years

12. Using pins to retain amalgam restorations increases the risk of

1. cracks in the teeth
2. thermal sensitivity
3. pulpal exposures
4. periodontal ligament invasion

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

13. A favorable prognosis for the pulp after direct pulp capping may be expected if which of the following criteria are met:

1. The exposure is small (< 1.0mm in diameter) < 0.5mm
2. Tooth sensitivity to a cold stimulus lasts longer than 10 seconds after stimulus removal
3. The invasion of the pulp was traumatic with moderate physical irritation to the pulp
4. Preparation was not prepared under the rubber dam
5. There is excessive hemorrhage from the exposure site

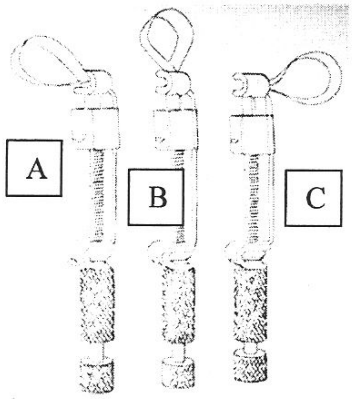
a. all of the above b. none of the above c. two of the above d. three of the above

14. Which tofflemire matrix retainer orientation shown to the right is best for restoring tooth # 3?

a. A b. B c. C

15. Which tofflemire matrix retainer orientation shown to the right is best for restoring tooth # 30?

a. A b. B c. C



16. 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

17. Restoration of a cusp using dental amalgam requires that
   a. all the enamel be removed from the cusp to provide bulk of amalgam
   b. only the enamel be removed to conserve tooth structure
   c. at least 2 mm of the cusp be removed to provide retention form
   d. at least 2 mm of the cusp be removed to provide resistance form

18. An MO amalgam restoration is more resistant to fracture if
   a. an occlusal dovetail is present retention
   b. the axiopulpal line angle is beveled or rounded
   c. pins are placed in the dentin of the cavity preparation
   d. the unsupported enamel at the gingivocavosurface margin is planed

19. A deficient margin at a proximogingival cavosurface angle of a freshly condensed Class II amalgam restoration may have been caused by
   1. poor condensation of the amalgam
   2. neglecting to wedge the matrix band
   3. use of too large an initial increment of amalgam
   4. debris in the corner of the proximal box

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

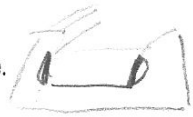
20. The bur should be tilted lingually when preparing the occlusal aspect of a Class II preparation on a mandibular first premolar in order to
   1. remove unsupported enamel
   2. prevent encroachment on the facial pulp horn
   3. prevent encroachment on the lingual pulp horn
   4. maintain dentinal support of the lingual cusp

   a. 1 and 2 b. 1 and 3 c. 2 and 4 d. 3 and 4 e. 2 only

21. Resistance to proximal displacement in the ideal Class II amalgam restoration is provided by
   1. the adjacent tooth
   2. occlusal dovetail
   3. Converging proximal walls
   4. Retention grooves in proximoaxial line angles

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

22. Which of the following correctly describes a retentive lock?



   1. A retentive groove whose length is in a longitudinal plane.
   2. A groove placed along the axiogingival line angle.
   3. A groove placed along the DEJ.
   4. A groove 0.5 mm depth at the gingival floor level, becoming shallower and terminating at the axiolinguopulpal (axiofaciopulpal) point angle.

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

According to material presented in lecture and the Sturdevant text, identify the following statements (questions 23 - 30) 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

23. The lingual surfaces of the posterior teeth usually have their height of contour in the middle third of the crown.
24. Because caries is an infectious disease, the removal of the caries during the restoration of a tooth reduces the microorganisms involved in the disease and may reduce the potential spread.
25. In a Class I amalgam cavity preparation retention form is provided by mesial and distal walls that converge occlusally.
26. Medium sized self-threading pins may elicit an inflammatory response if placed within 0.5mm of the pulp, whereas slot placement does not.
27. Infected dentin has bacteria present, is not remineralizable and should be removed.
28. 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.
29. A tapered fissure bur can be described as a slightly tapered cone with the small end of the cone directed toward the bur shank.
30. The reaction that occurs in a mixture of zinc oxide and eugenol (IRM) is exothermic

Name: _____ **Seat #:** _____

all answers worth two points **40 points total**

This section of the exam contains 20 short answer type questions. Read the directions and questions carefully. All answers should be short, precise, legible and spell-checked. Answers that cannot be read will be marked wrong. Responses containing the correct answer surrounded by numerous non-correct answers will also be marked wrong.

Education is something that one gets from a school, university or life experience. Learning on the other hand is an ongoing process defined and measured by the acquisition and appropriate application of new skills, knowledge, and values. The acquisition of knowledge is obviously occurring in RD II. However appropriate application of that knowledge to clinical situations is difficult to evaluate in a preclinical lab and lecture course. To help bridge the gap between the preclinic and clinic, I've decided the class should follow the exploits of newly graduated dentist, Dr. Ignatious William Hurtu. His friends call him Dr. Iggy while his patients just call him Dr. Will Hurtu. You will observe Dr. Iggy as he treats patients in his new office. Occasionally you will be required to supplement Dr. Iggy's limited knowledge base by providing answers to dental questions that confuse the good doctor. So without further delay, let's help Dr. Iggy hang his beautifully matted and framed education on his office wall and head to the clinic to see what he has learned after five years of formal dental education.

Dr. Iggy's first patient is a new patient who presents for an exam and cleaning. During the exam Dr. Iggy notices a dark grey / bluish shadow under the mesial marginal ridge of tooth # 3. He suspects this is a carious lesion and gives it a Code **4** according to the ICDAS system. What is the best way to diagnose interproximal caries on posterior teeth? **Radiographs (preferably bitewings)**? The distal pit and OL groove show staining and decalcification that extends up the lateral walls of the fissure with localized enamel breakdown (without clinical visual signs of dentinal involvement). Dr. Iggy gives this lesion a Code **3**.

A diagnosis of proximal caries is made and after the patient reports cold sensitivity on the tooth a decision is made to perform thermal testing. Describe the technique for cold thermal testing and what the possible results would indicate about the tooth: **Application of cold using a cotton pellet (and endo-ice) or ice that produces sensitivity lingering less than 10 seconds indicates reversible pulpitis and the possibility of pulpal repair. Sensitivity lasting greater than 10 seconds indicates irreversible pulpitis and minimal chance for pulpal repair. Root canal may be necessary.**

Dr. Iggy's next patient just cancelled opening up a block of free time so the decision is made to perform an operative procedure on tooth # 3. What bur should Dr. Iggy use to perform the initial punch cut and outline form? **245**
Why would you choose this bur? **3mm length to the cutting head provides adequate cutting length and "pear shape" provides undercut necessary for retention.**
Cutting head of a 330 is too short for a molar and not the BEST choice. A straight fissure bur could work (56 / 57) but it is not the BEST choice because it does not create undercut.

Dr. Iggy is not sure about what to do about the distal pit and OL groove. He remembers a lecture by an extremely bright and knowledgeable professor showing a correlation between the severity of carious lesions and their histological depth. Based on the ICDAS code given to the distal pit and OL groove, describe the histological depth of the lesion you would expect to see. **extends to the middle 1/3 of the dentin**

Based on all the information given, would you perform an operative procedure on the distal pit and OL groove? (yes no) Justify your answer. **Histological studies show that decay has penetrated into dentin. Self repair / remineralization is not likely and restoration is recommended.**

Regardless of your diagnosis, Dr. Iggy decides to perform a Class I preparation on the distal pit and OL groove. As Dr. Iggy prepares to punch cut into the distal pit what preparation modification regarding the pulpal floor should he remember about this preparation? **Pulpal floor should follow the external surface of the tooth.**

The ideal Class I preparation outline form is complete on the distal pit and OL groove. Dr. Iggy returns to the Class I preparation in the mesial pit and prepares to drop the mesial box. Teeth 3 and 4 are in ideal position with no rotation or tilting. Dr. Iggy wonders if he needs an "S" curve on this prep. Give 2 reasons for placement of an "S" curve when preparing a proximal box on a Class II amalgam.

allows alignment of proximal lateral walls to create a 90° cavosurface margin

conserves tooth structure near pulp horn

provides for bulk of amalgam over the axiopulpal line angle

Given that this tooth is in ideal contact with # 4, if an "S" curve is necessary on this tooth what tooth surface would most likely require it and why?

(2 pts) MB proximal wall. Decay occurs below the contact point and the preparation must remove decay and extend to sound tooth structure. The contact point is located buccal to the central groove and the "S" curve is necessary to blend the two areas of the preparation providing a smooth-flowing continuous outline form without sharp angles

Dr. Iggy opens the outline form on the buccal and lingual enough to break contact with the adjacent tooth. Before he begins to drop the proximal box he looks for an anatomic landmark on the tooth. What is this landmark?

(2 pts) DEJ.

I also accepted contact point but DEJ was the BEST answer.

As he begins to drop the box what are the two clinical criteria he is using to determine the gingival extent of the proximal box?

Break contact with the adjacent tooth

Extend the outline form to sound tooth structure

After completing the ideal outline form and depth for the MO preparation, Dr. Iggy notices that caries remains on the pulpal and axial walls of the MO prep, and the lateral wall of the oblique ridge in the OL groove. All other areas of the preparation are caries free. What should be the next step in treatment? **(2 pts) Opening the OL groove outline form to remove decay on the oblique ridge should occur first. Removing decay on the pulpal and axial walls should occur last. Many**

responses indicated crossing the oblique ridge but did not give the criteria (1mm of remaining tooth or undermined by decay). Crossing the oblique ridge should only occur if those criteria are met.

The excavation of decay on the MO preparation produces a final preparation with 0.5 mm of remaining dentin. Please indicate what materials Dr. Iggy should place under the final amalgam restoration? (please indicate the proper order of placement and justify their use)

(2 pts) Dycal (Calcium hydroxide), + a stronger base (IRM and GI acceptable) In a deep cavity preparation varnish (or bonding agent) would be placed last to allow dentin stimulation by placement of the dycal.

Dr. Iggy is now ready to restore tooth # 3 with amalgam. After placing the matrix band and wedge he worries that gaps may exist between the band and the tooth allowing for the formation of overhangs. Describe the procedure that Dr. Iggy should use to insure proper adaptation of the matrix band against the tooth?

(2pts) Press and drag an explore across the gingival cavosurface margin checking for gaps and/or debris

Dr. Iggy uses articulation paper to check the occlusion of the final restoration. He sees what appears to be a "bulls-eye" mark on the mesial marginal ridge. What is a "bulls-eye" mark and what does it indicate? Be specific.

(2pts) A "Bulls-eye" mark indicates severe hyper occlusion. "Bulls-eye" marks should be adjusted first and may require more adjustment because they are the heaviest. As the occlusal adjustment continues, previous lighter marks might become "Bulls-eye" and previous non-existent marks may become visible.