

**ENDODONTICS DEND #948**

**FINAL EXAMINATION**

**TUESDAY, DECEMBER 7, 2004**

**9:00 TO 10:00 A.M.**

**Endodontic case #1: Questions 1 through 5.**

You have a 10-year-old patient in your chair. He experienced trauma to his upper lip and fractured #8 and avulsed #9 a day prior to seeing you. He was seen at the emergency room yesterday where medical care was provided and then referred to you for dental examination. The mother says, "the tooth was put back into his mouth within the hour of the injury."

1. At this age, the apices of #8 and #9 are most likely not fully formed (open apex).
  - A. True
  - B. False
2. #8 has an uncomplicated fracture. What does that include?
  - A. Enamel dental and pulp
  - B. Enamel only
  - C. Enamel and dentin
  - D. Crown and root fractures
  - E. B or C
3. On clinical and radiographic examination, you find that #8 is non-responsive to thermal and electric testing but acutely responsive to percussion or palpation. What is the first treatment approach you should try?
  - A. Bond and place composite restoration.
  - B. Access the tooth for pulpectomy and apification with CaOH dressing.
  - C. Palliative treatment such as occlusal adjustment and pain control and retest tooth in 2 weeks.
  - D. Partial pulpotomy and restore tooth and observe tooth.
4. On examination, #9 seems to be positioned correctly in the socket and displays no abnormal mobility. What do you do next for #9?
  - A. No treatment necessary at this time but patient needs to be observed every 6 months.
  - B. No treatment necessary at this time but patient needs to be recalled in 2 weeks to recheck pulp status of #9.
  - C. Access the tooth for pulpectomy and apification with CaOH dressing.
  - D. Begin apexogenesis procedure.
  - E. Spirit tooth for 2 weeks.

**INSTRUCTIONS:**

Using a #2 pencil, shade in the correct letter on the computer answer sheet provided. There is only one correct answer per question. Be sure your answer sheet has your I.D. number and your name on it.

5. Patient did not return for one year and now has a sinus tract opening, which can be traced to #9. What procedure would you most likely start and how would you increase the chances of success?
- Apexification and make sure of patient compliance due to the length of the treatment.
  - RCT on #9 in two appointments with a CaOH intraoral dressing to make sure the sinus tract heals.
  - Extract #9 and make an appointment for an implant procedure.
  - Do not treat the patient.
  - Apical surgery and place a retrograde filling.
- 
6. Which of the following is true regarding the restoration of endodontically treated teeth?
- All endodontically treated teeth require protective coronal casting.
  - Endodontically treated teeth usually have the same tactile sensation as non-endodontically treated teeth.
  - The mandibular canine is the site of most post failures due to cuspid guided occlusion (receives the most lateral force).
  - Loss of retention is the most frequent cause of post failures.
  - A high number of post failures are due to root fractures.
7. All of the following statements are true except:
- The purpose of buildup is to strengthen the tooth.
  - The ferrule effect is a cast restoration extending at least 2 mm apical to the junction of the core and the remaining tooth structure.
  - All endodontically treated teeth required a coronal or corono-radicular restoration.
  - The number one reason for failure of endodontically treated teeth is inadequate prosthetic treatment.
8. Which of the following is true?
- Biological width relates to the amount of tooth structure coronal to the osseous crest and the gingival attachment apparatus.
  - A minimum of 2 mm of tooth structure coronal to the osseous crest will be necessary for biological width and crown margin accommodation.
  - Posts and buildups strengthen the tooth.
  - A post should be placed in almost every tooth that had a root canal therapy.
9. With regard to coronal radicular build-up:
- Amalgam restoration is the material of choice for all teeth.
  - There is no need to recess canal orifices if 3 mm of coronal dentin wall exists.
  - If coronal wall is adequate, recess orifice 2 mm.
  - Natural pulp chamber undercuts do not provide sufficient retention.

10. Which of the following statements is true regarding the prognosis of root canal therapy?
- The asymptomatic tooth, necrotic pulp and/or chronic periradicular periodontitis, will have the best overall successful outcome after treatment.
  - The presence of a periradicular lesion generally decreases the overall success rate anywhere from 10 to 20%.
  - The success rates with teeth having vital pulps is generally no higher than 85%.
  - It is highly recommended that clinicians only prognosticate after treatment.
11. All of the following are true regarding a clinical criteria for success except?
- Absence of pain.
  - Absence of swelling.
  - Disappearance of sinus tract.
  - Reduction of periapical lesion.
  - Decrease in probing depths.
12. Which of the following is false considering radiographic evaluation?
- Success is the elimination of a lesion.
  - Questionable when a lesion does not change in size until one year.
  - Apical scar will not prevent restoration of the PDL.
  - Failure is when a lesion progresses or develops.
13. Which of the following statements is correct?
- It is best to use a rigid splinting method for luxation or extrusion injuries to make sure the tooth stays in the most ideal position during healing.
  - Allow 4 to 8 weeks for alveolar healing with rigid splints.
  - A patient who shows signs of a subluxation injury will typically not show mobility of their involved tooth.
  - Approximately 88% of lateral luxation injuries result in surface resorption.
14. The treatment of intrusive tooth injuries involves all of the following except:
- For immature apex, let the tooth spontaneously re-erupt from the locked position.
  - For developed apex, active orthodontic extrusion for 3 weeks is recommended.
  - Root canal treatment for all mature and immature roots is recommended.
  - No treatment indicated unless signs of necrosis evident.
15. Which of the following is not true regarding concussion injuries?
- No displacement present.
  - Usually tender to percussion.
  - Mobility observed.
  - No immediate treatment required.

16. Over or shallow pulpotomy is indicated in what situations?

- A. Tooth is necrotic and asymptomatic.
- B. Evidence of root resorption.
- C. Radiographic evidence of periapical lesion.
- D. Teeth responds to pulp testing.

17. Which of the following best describes the contraindications for vital pulp therapy?

- A. Immature tooth, restorable, severe crown fracture, vertical root fracture.
- B. Avulsion, severe luxation, severe crown fracture, horizontal root fracture, unrestorable tooth, necrotic pulp.
- C. Incomplete roots, healthy pulp, restorable immature tooth, when a Over endo procedure is also necessary.
- D. When a pediatric patient requires pulpal therapy after a small mechanical carious exposure.

18. The management of incomplete formed roots include all of the following except:

- A. The goal of apexogenesis is to continue root formation and maintain pulp vitality.
- B. Apification is indicated for vital pulp teeth with open apex.
- C.  $\text{Ca}(\text{OH})_2$  and MTA are used in apification to create apical stop.
- D. Vital pulp therapy is not indicated in avulsion or severe luxation.

19. All of the following are indications for nonvital bleaching except:

- A. Dentin discolorations.
- B. Discolorations not amenable to external bleaching.
- C. Superficial enamel discolorations.
- D. Discolorations of pulp chamber origin.

20. What is the bleaching material of choice?

- A. Hydrogen peroxide.
- B. Carbamide peroxide
- C. Sodium perborate.
- D. Sodium hypochlorite

21. Of the following statements, which best describes pulpal infection as compared to periodontal infection?

- A. Restorations are typically not present in the tooth under question.
- B. Plaque can often be a culprit in causing pulpal infection.
- C. Tooth vitality can be either nonvital or vital.
- D. Inflammation is usually acute rather than chronic.

22. In a primary endo/secondary perio lesion, we most likely find:

- A. Vital pulp.
- B. Carious/deep restoration.
- C. Plaque and calculus as a primary cause.
- D. Generalized bone loss.

23. Which of the following statements is true about lateral and accessory canals?

- A. Common in anterior teeth and in apical 3rd.
- B. Can carry irritants from canal to the PDL and vice versa.
- C. Can only carry irritants from the canal to the PDL and is common in apical third of posterior teeth.
- D. Very often seen on the radiographs.

24. What are some indications regarding using the Ochsenbein Luebke flap in endodontic surgery?

1. Used if the tooth has a short root in comparison to other teeth.
2. For aesthetic reasons, such as the recent placement of anterior crowns.
3. If minimal shrinkage of the gingival sulcus is desired.
4. A requirement is that there must be a minimum of 5 mm of attached gingiva present.

- A. 3, 4
- B. 1, 2, 3, 4
- C. 2, 3, 4
- D. 2, 3

25. The following is true regarding endodontic surgery except:

- A. The canine eminence should not be involved on the vertical incision.
- B. More scarring is observed on the submarginal flap.
- C. Undermining elevation should start with the horizontal incision.
- D. Full thickness mucoperiosteal flap is always used for endo surgery.

26. Ultrasonic root end preparation:

- A. Permits the clinicians to include irregularities of the canal in the preparation.
- B. Permits the clinicians to use acute bevels during root end surgery.
- C. Requires a larger osseous window when compared to the microhandpiece.
- D. Is performed dry to permit visualization and accurate preparation.

27. Periapical curettage include the following except:

- A. Aid in confirmation of diagnosis (biopsy)
- B. Increased hemorrhage with removal of inflamed tissue.
- C. Decreased hemorrhage with removal of inflamed tissue
- D. Better access and visibility.

28. Which of the following statements best applies in using ultrasonics in endodontic therapy?

1. Increase efficacy of irrigation.
2. The Pizzo electric unit has approximately 40,000 cycles per second.
3. The motion of the tip is no linear making it ideal for endodontics.
4. The Magnosonic unit is more modern and is better for endodontic use than the Pizzo electric unit because it has 24,000 cycles per second.
5. Ultrasonic units are helpful for retropreparations and removing posts and cores, as well as for finding canal orifices.

29. The Profile rotary instruments:

- A. Produce an accelerated smear layer.
- B. Operate at low speeds and variable speeds.
- C. Conform to ISO standards for instrument design.
- D. Prepare the canal from the apex to the crown.

30. All of the following are true about Nickel Titanium Rotary Instruments EXCEPT:

- A. Stay more centered in the canal.
- B. Can break due to cyclic fatigue.
- C. Profiles are usually more aggressive than ProTaper files.
- D. Lightspeed mimics a HNTI Gates Glidden bur.

31. All the following statements are true of electric rotary motors compared to air motors except:

- A. Variable RPM.
- B. Smoother and quieter.
- C. Torque control feature.
- D. More consistent.

Endodontic cases #12: Questions 32 through 35.

A patient presents to the emergency clinic with a cc. "Whenever I breathe in, this tooth over here (upper left area) really hurts. I can't drink anything cold without having extreme pain." Intracanal and radiographic examinations reveal a large carious lesion on #13 involving the pulp chamber. Periapical examination of #13 reveals black lamina dura and widened periodontal ligament, no periapical radiolucency noted.

32. What tests would you do to determine the diagnosis of this tooth?

- A. Ice test
- B. Percussion
- C. Anesthetic test
- D. A and B
- E. All of the above

33. Diagnose #13 (use both the above case information and the table below).

Tooth Number	Cold	Percussion	Palpation	Probing
#12	Responds, no lingering	None	None	3 mm or less
#13	Pain with lingering	Pain	None	3 mm or less
#14	Responds, no lingering	None	None	3 mm or less

- A. Necrotic pulp with normal periradicular area.
- B. Irreversible pulpitis.
- C. Irreversible pulpitis with normal periradicular area.
- D. Irreversible pulpitis with acute periradicular periodontitis.
- E. None of the above.

34. Which of the following would not be helpful in treating this emergency?

- A. Pupotomy
- B. Analgesics
- C. Long-acting anesthetics
- D. Antibiotics
- E. All of the above

35. If treated properly, nonsurgical root canal therapy (NSRCT) on #13 has a higher success rate than NSRCT on a tooth with a necrotic pulp and periradicular pathology.

- A. True
- B. False

36. Absence of signs and symptoms after treatment would not affect the success in this case. The final restoration would not affect the success in this case.

- A. Both statements are true.
- B. Both statements are false.
- C. First statement is true, second statement is false.
- D. First statement is false, second statement is true.

37. A patient describes pain on chewing and sensitivity to cold that goes away immediately with removal of the stimulus. The mandibular left second molar, tooth #18 exhibits a mesial occlusal crack. The tooth is caries free, and no restorations are present. Periodontal probing depths are 3 mm or less. Which of the following statements is correct?
- The pulpal diagnosis is normal pulp, and the tooth should be prepared and restored with a mesial-occlusal bonded amalgam.
  - The pulpal diagnosis is reversible pulpitis, and the tooth should be restored with a crown.
  - The pulpal diagnosis is irreversible pulpitis, and root canal treatment should be performed, a bonded amalgam placed, and a crown fabricated.
  - A radiograph will likely reveal a radiolucent area associated with the mesial root.
  - The prognosis for the tooth is unfavorable.
38. The acute apical abscess is best differentiated from the acute apical periodontitis by:
- Pulp testing.
  - Radiographic appearance.
  - Presence of swelling.
  - Degree of mobility.
39. Chronic apical periodontitis is best differentiated from acute apical periodontitis by:
- Pulp testing and radiographic appearance.
  - Pulp testing and nature of symptoms.
  - Radiographic appearance and nature of symptoms.
  - Pulp testing, radiographic appearance, and nature of symptoms.
40. In shaping and cleansing the canal of a vital maxillary central incisor, a practitioner has inadvertently perforated the apical foramen. This error can result in each of the following except one. Which one is this exception?
- Pain to the patient.
  - Enlargement of the foramen.
  - Trauma to the apical tissue.
  - Necrotic tissue being forced into the apical tissues.
41. A dentist restored an endodontically treated tooth with a cast post-and-core and a metal ceramic crown. Three months later, the patient calls and complains of pain, especially on biting. Tooth mobility is normal, as are the radiographs. The most probable cause of pain is:
- A loose crown.
  - Psychosomatic.
  - A vertical root fracture.
  - A premature eccentric contact.

42. A new patient had root canal therapy performed seven months ago in another country. No historical radiographs are available. The root canal filling appears to be satisfactory, the tooth is asymptomatic, and there is no associated sinus tract. However, a small periapical radiolucency is evident. Which of the following is indicated?
- Incision and drainage.
  - Nonsurgical retreatment.
  - Re-evaluation in six months.
  - Apicoectomy and apical amalgam.
  - Prescription of an appropriate antibiotic.
43. A middle-aged woman has been referred for diagnosis of multiple radiolucent lesions around the apices of her mandibular incisors. The patient is asymptomatic, the teeth are normal on vitality tests, no cortical expansion is noted, and the periodontium is normal. Medical history and blood tests are normal. What is your diagnosis?
- Periapical cemental dysplasia or cementoma.
  - Central giant cell granuloma.
  - Hyperparathyroidism.
  - Multiple endodontic lesions.
44. The minimum depth for a retropreparation on an apically resected root is 3 mm. This depth may be increased with increase in the angle of root resection.
- First statement is true, second statement is false.
  - First statement is false, second statement is true.
  - Both statements are true.
  - Both statements are false.
45. In obtaining a correct diagnosis for a dental problem, it is necessary to identify the patient's chief complaint. That complaint can be a description of the existing problem in the patient's own words and not necessarily an exact technical summary.
- True
  - False
46. Even though some routine information related to personal data, medical history and dental history as well as the chief complaint may be obtained by staff, the dentist must review and be familiar with the data before proceeding further.
- True
  - False
47. A tentative diagnosis cannot be confirmed or denied by hands-on oral examination and clinical tests.
- True
  - False

48. A bilateral objective infrarot and extrarot tissue examination is reliable for the presence or absence of parotitis.

- A. True
- B. False

49. Penetration of caries into a symptomatic pulp indicates irreversible pulpitis requiring root canal treatment.

- A. True
- B. False

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**ENDODONTICS DEND #348**

**FINAL EXAMINATION**

**TUESDAY, DECEMBER 5, 2000**

**INSTRUCTIONS:**

Using a #2 pencil, shade in the correct letter on the computer answer sheet provided. There is only one correct answer per question. Be sure your answer sheet has your I.D. number and your name on it.

1. What is the most important factor regarding success after tooth replantation?
  - ☒ A. PDL cells vitality
  - B. Maturity of the tooth
  - C. The cause of the trauma
  - D. The type of trauma
  
2. What is the most appropriate storage medium for avulsed teeth?
  - A. Milk
  - B. Saliva
  - C. Saline
  - ☒ D. Hanks Balanced Salt Solution (HBSS)
  
3. What is the best definition for mobility of a tooth without displacement?
  - ☒ A. Subluxation
  - B. Extrusive luxation
  - C. Lateral luxation
  - D. Intrusive luxation
  - E. Concussion
  
4. What is the usual possible outcome of reimplanted teeth that have been root canal treated subsequently to reimplantation?
  - A. Replacement resorption
  - B. Inflammatory resorption
  - C. Ankylosis and replacement resorption
  - D. Ankylosis and inflammatory resorption
  - ☒ E. Ankylosis, replacement resorption and inflammatory resorption
  
5. What is a good time to initiate RCT after reimplantation of a tooth with a short extraoral time (15 minutes)?
  - A. Immediately after reimplantation
  - B. 2-3 days after reimplantation
  - ☒ C. 1 week after reimplantation
  - ☒ D. 2-3 weeks after reimplantation
  - E. No RCT is necessary
  
6. What can be the cause for inflammatory resorption?
  1. Sealer
  2. Bacteria
  3. Absence of PDL
  4. Clastic cells (cementoclasts, osteoclasts, denticoclasts)
  - A. 1 and 2
  - B. 1 and 3
  - ☒ C. 2 and 4
  - D. 1, 2 and 4

- 7 What is the appropriate splinting time for an avulsed and reimplanted tooth without concomitant alveolar fracture?
- A. 2-5 days
  - B. 5-7 days
  - ☒ C. 7-10 days
  - D. 10-13 days
- 8 What traumatic injury has the worst prognosis in terms of root resorption?
- A. Subluxation
  - B. Extrusive luxation
  - C. Lateral luxation
  - ☒ D. Intrusive luxation
  - E. Concussion
- 9 Which of the following will help in reducing inflammatory resorption after tooth reimplantation?
- 1 Pulp removal and intracanal dressing
  - 2 Soaking in a doxycycline solution
  - 3 Tooth splinting
  - 4 Maturity stage of the tooth
  - 5 Rinsing of the tooth with saline before reimplantation
- A. 1 and 2
  - B. 2 and 3
  - C. 3 and 5
  - ☒ D. 1, 2 and 5
- 10 What type of resorption is unstoppable once started?
- A. Inflammatory resorption
  - ☒ B. Replacement resorption
  - C. Internal resorption
  - D. Apical resorption
- 11 Which of the four types of electronic apex locators measures the maximum difference of impedance between electrodes?
- A. Impedance-type
  - B. Ratio-type
  - ☒ C. Frequency-type
  - D. Resistance-type
- 12 Which of the four types of electronic apex locators measures impedance at two frequencies and then calculate the ratio?
- A. Impedance-type
  - ☒ B. Ratio-type
  - C. Frequency-type
  - D. Resistance-type

- 13 Rapid movement of fluid around a vibrating object is called:
- ☒ A. Acoustic streaming.
  - B. Ultrasonic vibration.
  - C. Sonic vibration.
  - D. Rotary vibration.
- 14 What is the difference between Obtura II and Ultrafil gutta percha delivery system?
- A. The gutta percha preparation
  - ☒ B. Heat of the system
  - C. Using of a syringe as the method of delivery
  - D. There is no difference between the two system
- 15 CollaCote and Cut-Trol are two examples of:
- ☒ A. Hemostatic agents.
  - B. Obturation material.
  - C. Sealers.
  - D. None of the above.
- 16 Which of the following is a nontoxic absorbable collagen wound dressing?
- A. CollaCote
  - B. Stasis
  - C. Cut-Trol
  - ☒ D. All of the above
- 17 Which of the following is rhomboid in cross-section?
- A. S-File
  - ☒ B. K-Flex file
  - C. All of the above
  - D. None of the above
- 18 Which of the following is a radiographic technique that "slices" teeth into thin sections?
- A. Laser doppler flowmetry
  - ☒ B. Tomography
  - C. Digital subtraction radiography (DSR)
  - D. Camera charge-coupled device (CCD)
- 19 \_\_\_\_\_ is a friction-grip, safe-ended and tapered, tungsten carbide bur used for shaping and flaring the walls after the roof has been penetrated?
- ☒ A. Endo-Z bur
  - B. Round bur #2
  - C. LN bur
  - D. GPX (gutta percha extractor)
- 20 Green Endo-Ice and Frigi-Dent can be used as a:
- ☒ A. Thermal test
  - B. Topical anesthetic
  - C. None of the above
  - ☒ D. All of the above

21. When performing apexification on a tooth with open apex, the working length should be established to:
- 0.5 to 1.0 mm short of radiographic apex.
  - ☒ Radiographic apex.
  - 0.5 to 1.0 mm beyond radiographic apex.
  - None of the above.
22. What materials can be used to create an artificial barrier in an attempt to perform one-visit apexification?
- Dentinal plugs
  - Dry calcium hydroxide powder
  - Tricalcium phosphate
  - None of the above
  - ☒ All of the above
23. A 9-year-old boy has a pinpoint caries exposure during cavity preparation on tooth #9. Patient was asymptomatic, cold test response was normal, and radiographic examination revealed that the canal is slightly divergent. What is the appropriate management for the tooth?
- Conventional root canal treatment
  - Apexification
  - ☒ Apoenogenesis
  - Surgical endodontic treatment
24. What are the complications of a tooth with an open apex?
- Thin canal walls
  - Prone to fracture
  - Difficult or impossible to perform orthograde root canal filling
  - Poor crown/root ratio
- 1 and 2
  - 3 and 4
  - 1, 2, and 3
  - 1, 3, and 4
  - ☒ All of the above
25. What is the importance in using radiographs as a diagnostic aid with an open apex tooth?
- Radiograph is the most accurate diagnostic aid
  - It is difficult to differentiate normal radiolucency around the healthy developing apex from the pathologic radiolucency of a necrotic pulp ✓
  - Radiograph is not necessary in making diagnosis of an open apex tooth
  - Radiograph only reveals two dimensions ✓
- Only 1
  - Only 2
  - Only 3
  - ☒ 2 and 4
  - 2, 3, and 4

The below statement applies to Questions #26 and #27 only:

An 8-year-old boy presented with extensive decay on tooth #30. Vitality test result was negative. Radiographically, the canal walls are divergent, and periradicular radiolucency is noted around the apex.

26 According to the Glossary of American Association of Endodontics, how do you describe the morphology of the root apex?

- A. Non-blunderbuss
- ☒ B. Blunderbuss
- C. An open apex
- D. Any of the above
- E. None of the above

27 What is the appropriate management for the tooth?

- A. Conventional root canal treatment
- ☒ B. Apexification
- C. Apexogenesis
- D. Surgical endodontic treatment

28 What is the most important procedure in achieving a successful apexification or apexogenesis?

- A. Cleaning and shaping
- ☒ B. Pack sufficient amount of calcium hydroxide powder
- C. Place permanent restoration
- D. Periodic recall
- E. Anesthetize the patient

29 What solution can be used to control bleeding when performing apexogenesis?

- 1. Saline ✓
- 2. Sodium hypochlorite
- 3. Lidocaine with 1:100,000 epinephrine
- 4. Lidocaine without epinephrine
- 5. Formocresol

- A. 1 and 3
- B. 2 and 3
- ☒ C. 1 and 4
- D. 4 and 5
- E. 3 and 5

30 What is usually the last resort in managing teeth with an open apex?

- A. Surgical endodontic treatment
- ☒ B. Conventional root canal therapy
- C. Apexification
- D. Apexogenesis
- E. None of the above

31 What is the difference between using hydrogen peroxide and sodium perborate as bleaching agent?

- 1 Sodium perborate is a caustic agent and will cause tissue burn
- 2 Sodium perborate is easier to control and safer to use ✓
- 3 Hydrogen peroxide is more stable and more effective ✗
- 4 Hydrogen peroxide is available to 30 to 35% aqueous solution
- 5 Hydrogen peroxide is a caustic agent and will cause tissue burn ✓

- A. 1 and 3  
B. 1 and 5  
C. 1, 3, and 4  
☒ D. 2, 4, and 5  
~~E. 3, 4, and 5~~

32 What are the causes of iatrogenic discoloration?

- A. Intracanal medication ✓  
B. Remnant pulpal tissue ✓  
C. Obturating material ✓  
D. Restorative material ✓  
☒ E. All of the above

33 When can the best results be obtained from walking bleach?

- A. At the same appointment as root canal obturation  
B. Many years after root canal was done  
C. A and B  
☒ D. There is no particular timing for the best result

34 The following materials are commonly used for bleaching teeth, except:

- A. Hydrogen peroxide. ✓  
B. Sodium perborate. ✓  
C. Sodium hypochlorite. ✓  
D. Carbamide peroxide.  
☒ E. All of the above are commonly used bleaching agents.

35 The following statements are true about walking bleach, except:

- ☒ A. Mouthguard bleaching is the technique.  
B. It can only be applied to endodontically treated teeth.  
C. The procedure may be repeated until desired result is obtained.  
D. Sodium perborate is the main bleaching agent to use.  
E. Significant results will not show in the first 2 or 3 days.

36 The following statements are true about external bleaching, except:

- A. It can be used on bleach vital teeth. ✓  
B. 30% hydrogen peroxide and carbamide peroxide are the main agents to use. ✓  
☒ C. It works the best for discoloration caused by enamel defects.  
D. Mouthguard bleaching is one of the external bleaching techniques.  
~~E. All of the above.~~

37 What needs to be done before packing performing walking bleach technique?

1. Rubber dam isolation ✓
2. Take clinical pictures ✓
3. Inform the patient possible cause of discoloration and possible outcome after bleaching ✓
4. Place a thin layer of polycarboxylate cement to protect root canal filling material ✓
5. Evaluate the quality of the root canal filling, retreat if necessary ✓

- A. Only 1  
B. 2 and 3  
C. 4 and 5  
D. 1, 2, and 3  
☒ E. All of the above

38 In order to prevent iatrogenic discoloration, the obturation material should:

- A. Fill the whole pulp chamber.  
☒ B. Be removed to the level just below gingival margin.  
C. Be removed to the level just above gingival margin  
D. Be removed to the middle of the root canal

39 Which of the following is least likely to cause discoloration of a tooth with a necrotic pulp?

- A. Decomposition of necrotic tissue  
B. Hemolysis of unremoved blood cells  
C. Failure to include pulp horns in a coronal access  
☒ D. Frequent ingestion of heavy doses of tetracycline  
→ E. Failure to remove sealer from the root canal

40 What are the contraindications of mouthguard bleaching?

- A. Hypersensitivity teeth ✓  
B. Defective coronal restorations ✓  
C. Allergy to bleaching gels ✓  
D. Bruxism ✓  
☒ E. All of the above

41 In which of the following teeth would there be a higher number of accessory canals?

- A. Mandibular second premolar, apical segment of the root  
B. Maxillary central incisor, coronal segment of the root  
C. Maxillary first molar (DB root), coronal segment of the root  
? ☒ D. Mandibular first molar (ML root, apical segment of the root

42 Which of the following failure cases would most likely be due to the presence of a lateral canal?

- A. A central incisor with previous root canal therapy and a no temporary restoration for two months.  
B. A single canal maxillary second premolar with previous root canal therapy and sealer expressed out of a large lateral canal  
☒ C. A lateral incisor with previous root canal therapy and thickening of the PDL in the middle third only.  
D. A mandibular first premolar with a large lesion at the radiographic apex.

- 43 Which of the following is the best diagnostic tool in differentiating a primary periodontal lesion from a primary endodontic lesion?
- A. Cold test
  - ☒ B. EPT test
  - C. Percussion test
  - ☐ D. Palpation
- 44 Which of the following is not associated with a periodontal abscess?
- A. Vital pulp
  - B. Asymptomatic
  - C. Foreign object entrapment
  - ☒ D. Inflammatory reaction
- 45 Which of the following classifications is least frequently found clinically?
- A. Primary Endo
  - ☒ B. Primary Endo-Secondary Perio
  - C. Primary Perio
  - ☒ D. Independent Endo and Perio
- 46 Which of the following factors contribute to the nature and extent of the inflammatory lesion?
- A. Virulence of the irritants in the root canal system
  - B. Host defense
  - C. Duration of disease
  - ☒ D. All of the above
- 47 Which of the following statements is false regarding the dentinal tubules?
- A. Dentinal tubules contain tissue fluid and odontoblastic processes
  - B. Dentinal tubules contain nerve fibers
  - C. Dentinal tubules are wider at the junction of DEJ and CDJ
  - ☒ D. Dentinal tubules are wider near the pulp
- 48 Which of the following tests is false about the percussion test?
- ☒ A. Good in differentiating an endo problem from a perio problem
  - B. Indicates inflammation in the PDL
  - C. Not a reliable test in general
  - D. Easy to conduct
- 49 Narrow probing indicates the following possibilities with the exception of:
- A. Endo defect
  - ☒ B. Horizontal fracture
  - C. Enamel spurs
  - D. Vertical root fracture
- 50 Which of the following may be an etiologic factor for an endodontic lesion?
- A. Caries
  - B. History of trauma
  - C. Discolored crown
  - ☒ D. All of the above

**Case Western Reserve University  
School of Dentistry  
Department of Endodontics**

**ENDODONTICS DEND #348**

**FINAL EXAMINATION**

**TUESDAY, DECEMBER 7, 1999**

**INSTRUCTIONS:**

**Using a #2 pencil, shade in the correct letter on the computer answer sheet provided. There is only one correct answer per question. Be sure your answer sheet has your I.D. number and your name on it.**

1. A temporary restoration of a tooth being treated endodontically does not need a good coronal seal to prevent bacterial contamination during treatment.  
A. True  
☒ B. False
2. The final restoration of an endodontically treated tooth must provide a permanent coronal seal and protect the remaining tooth structure as well as restoring form and function..  
☒ A. True  
B. False
3. More teeth treated endodontically develop problems or are lost because of restorative difficulties than because of failure of the root canal treatment itself.  
A. True  
B. False
4. Recurrent caries is not a major reason for extraction of endodontically treated teeth.  
☒ A. True  
B. False
5. Temporary endodontic restorative materials have wear and fracture resistance.  
A. True  
☒ B. False
6. Final restoration of an endodontically treated tooth may be delayed due to: compromised prognosis, the periodontal status may be questionable or for monetary reasons.  
A. True  
B. False
7. The use of posts to strengthen the endodontically treated tooth is very important.  
A. True  
☒ B. False
8. The cuspal flexure of an endodontically treated tooth does not increase the tendency to fracture, which will lead to eventual opening of margins between the tooth and the restorative material.  
☒ A. True  
B. False
9. The palatal canal of maxillary molars and the distal canal of mandibular molars are used for post placement.  
A. True  
☒ B. False
10. When retreating a root canal system through an existing restoration, the access opening is best restored with an amalgam filling.  
☒ A. True  
B. False

11. Posts with a length of at least three-fourths of the length of the root offered the greatest rigidity and least root deflection (bending)
- A. True
  - B. False
12. The most difficult stains from dental treatment to bleach successfully are from:
- A. Amalgam restoration.
  - B. Root canal sealers.
  - C. Composite restoration.
  - D. Gold restoration
13. Which of the following is not a contraindication to bleaching?
- A. Dentin hypersensitivity
  - B. Teeth with white spots
  - C. Patients over 70 years of age
  - D. Patient who are perfectionists
14. Cervical resorption in bleached pulpless teeth may result from:
- A. Bleach placed apical to the CEJ
  - B. Tooth becoming pulpless before patient reaches age 25.
  - C. A defect in the CEJ.
  - D. All of the above.
15. Which of the following is not part of the bleaching procedure for endodontically treated teeth?
- A. Rubber dam isolation
  - B. Acid etching
  - C. Superoxol or sodium perborate
  - D. A heat source
16. With night guard vital bleaching:
- A. The reported success rate is 75%.
  - B. Fluorosed teeth are the least responsive.
  - C. The bleaching agent is 10% carbamide peroxide.
  - D. Patients with removable partial dentures can wear the night guard only at night.
17. The Endex is a \_\_\_\_\_ Type electronic apex locator and the Root ZX is a \_\_\_\_\_ Type electronic apex locator.
- A. Resistance, ratio
  - B. Frequency, ratio
  - C. Impedance, resistance
  - D. Frequency, impedance
  - E. Ratio, frequency
18. The Flex-R file:
- A. Has a conical non-cutting file tip.
  - B. Is a modified Hedstrom-like flexible file.
  - C. Is a twisted file that is rhomboid in cross-section.
  - D. Is a K-type file that is triangular in cross-section.
  - E. Is a carbon steel instrument designed to negotiate small calcified canals.

19. What bur is a half round right angle bur that allows deep drilling alongside posts or broken instruments?
- A. Endo Z bur
  - B. Transmetal bur
  - C. LN bur
  - D. M-series orifice openers
  - E. GPX bur
20. Statim Cassette autoclave heat and steam sterilizes hand pieces in:
- A. 20 min, 300F, 50 psi.
  - B. 20 min, 375 F, 50 psi.
  - C. 6 min, 350 F, 75 psi
  - D. 6 min, 375 F, 25 psi
  - E. 6 min, 275 F, 35 psi
21. Ultrasonic instruments generate vibrational energy in excess of:
- A. 1500-3000 Hz
  - B. 5,000 Hz
  - C. 10,000 Hz
  - D. 20,000 Hz
  - E. 50,000 Hz
22. Which of the following hemostatic agents contains 21% ferric sulfate?
- A. Cut-trol
  - B. Stasis
  - C. Astringent
  - D. CollaCote
  - E. Tevdek
23. Apexification is the treatment of choice for a permanent tooth with a wide-open apex when:
- A. The pulp is necrotic.
  - B. There is a history of spontaneous pain with a carious exposure.
  - C. There is a large mechanical exposure with profuse bleeding.
  - D. All of the above.
24. Which of the following is not a contraindication for root canal therapy of primary teeth?
- A. Radiographic evidence of internal resorption in the roots
  - B. Apical restoration involving the roots.
  - C. Presence of dentigerous or follicular cyst.
  - D. Mechanical or carious perforation of the floor of the pulp chamber.
25. The main portal of entry for micro-organisms into the pulp is:
- A. Cracks.
  - B. Fractures.
  - C. Anachoresis.
  - D. Exposed tubules.





34. Cementum is an effective barrier to penetration of tubules by bacteria or their by-products.
- A. True
  - B. False
35. The endodontic lesion causes inflammatory connective tissue to replace the periodontium. After successful endodontic therapy, the periodontium will not regenerate to normal
- A. The first statement is true; the second statement is true.
  - B. The first statement is false; the second statement is true.
  - C. The first statement is false; the second statement is false.
  - D. The first statement is true; the second statement is false.
36. Vertical fractures produce which of the following periodontal conditions?
- A. Generalized probing
  - B. Swelling
  - C. Narrow probing defects
37. Which of the following is/are advantages of triangular flap design?
- A. Easily modified
  - B. Easily repositioned
  - C. Maintains integrity of blood supply
  - D. All of the above.
38. Disadvantages of Luebke-Ochsenbier flap are the following except:
- A. Horizontal component disrupts the blood supply.
  - B. Easy to alter if size of lesion misjudged
  - C. Vertical component crosses mucogingival junction and may enter muscle tissue.
39. Indication for a rectangular flap are all of the above except:
- A. Periapical surgery on multiple teeth.
  - B. Periapical surgery on small lesions.
  - C. Lateral root repairs.
40. Which of the following is/are indications for Luebke-Ochsenbier flap?
- A. Prosthetic crowns
  - B. Periapical surgery on anterior regions
  - C. Wide band of attached gingiva
  - D. All of the above.
41. A healthy 8-year-old child has a fractured permanent central incisor. The pulp is widely exposed and vital. From radiographs, root ends appear incompletely calcified. The recommended procedure is to:
- A. Cap the pulp.
  - B. Extract the tooth.
  - C. Perform a pulpotomy.
  - D. Remove the entire pulp.

47. If pulpal tissues of the mandibular first molar are exposed during caries removal, which of the following is the preferred treatment that offers the most favorable long-term prognosis?
- A. Root canal treatment and restoration
  - B. Pulpotomy and restoration with amalgam
  - C. Pulpotomy and restoration with a full crown
  - D. Direct pulp cap and restoration with amalgam
  - E. Direct pulp cap and restoration with a full crown

The following case history is for questions #48 through #50:

Radiographic examination reveals a 3 x 2 mm irregular radiolucency in the middle third of the pulp canal space of a mandibular first premolar. Six months ago, a  $\frac{3}{4}$  crown was placed as an anterior retainer for a four-unit fixed partial denture. Periapical structures appear normal radiographically; the tooth is asymptomatic. No swelling or sinus tract is evident. The tooth responds to vitality tests at the same levels as those of the normal contralateral tooth.

48. If a histologic slide of the tooth and the contents of its canal space could be obtained, the most likely finding in the region of the radiolucency would be:
- A. A normal pulp.
  - B. Pulpal necrosis.
  - C. Dentinoclastic activity.
  - D. Acute pulpitis (microabscess).
  - E. Markedly decreased cellularity.
49. If apical tissues were examined histologically, the most likely finding would be:
- A. A normal periapex.
  - B. Acute inflammation only.
  - C. Chronic inflammation only.
  - D. Acute inflammation plus clastic activity.
  - E. Chronic inflammation plus clastic activity.
50. Treatment of choice for the condition described is:
- A. Pulpotomy.
  - B. Radiation therapy.
  - C. Root canal treatment only.
  - D. Root canal treatment and periapical surgery.
  - E. None of the above. No treatment is indicated.

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51. The primary function of access openings is to:
- A. Facilitate canal medication.
  - B. Provide good access for irrigation.
  - C. Aid in locating of canal orifices.
  - D. Remove the entire roof of the pulp chamber.
  - E. Provide straight line access to the apex.