

Database of questions for the Medical-Dental Final Examination (LDEK)

Part 2

Endodontics & Restorative dentistry

Modified 18.12.2023

1. Choose **false** statements regarding the root cementum, cementum:
 - A. the layer directly covering the root cementum is acellular.
 - B. it is the softest, from all mineralised tooth tissues, which covers the root surface on its whole length.
 - C. root cementum covers directly the root dentin.
 - D. slow layering of cementum, which causes the narrowing and, in some cases, even closing of the apex, happens with age.
 - E. layer of root cementum in the apical area expands three times between the 10th and 70th year of age.

2. Radioactive triggers are factors which are harmful towards the pulp and other tooth structures. Choose a complication which **will not** occur during radioactive treatment of a malignant cancer located in the viscerocranium:
 - A. odontoblasts' damage.
 - B. pulpitis.
 - C. increased saliva secretion.
 - D. pulp necrosis.
 - E. pulp calcification.

3. Etiopathogenesis of endodontium and apical tissue illness, inflammatory and destructive processes are regulated by many cell and humoral factors. Choose humoral factors:
 - 1) cytokines;
 - 2) chemokines;
 - 3) lymphocytes;
 - 4) monocytes;
 - 5) eicosanoids.Correct answer is:
A. 1,2,4. B. 1,3,5. C. 1,2,5. D. 2,3,4. E. 3,4,5.

4. Regressive changes are a result of slow atrophy of tissues and cells. The causes of such changes are usually metabolism and eating disorders. What form may regressive changes take in pulp?
 - 1) hyperplasia;
 - 2) degeneration;
 - 3) atrophy;
 - 4) hypertrophy;
 - 5) necrosis.Correct answer is:
A. 2,3,4. B. 1,4,5. C. 2,3,5. D. 1,3,5. E. 1,2,4.

5. Choose local factors responsible for pulp degeneration:

- 1) chemical triggers;
- 2) moderate mechanical triggers;
- 3) metabolism disorders;
- 4) pathological attrition;
- 5) nutritional and vitamin deficiencies.

Correct answer is:

A. 2,3,5. **B.** 2,3,5. **C.** 1,2,3. **D.** 1,2,4. **E.** 1,3,5.

6. Choose correct statements regarding odontinoids:

- 1) mineral salt deposits occurring in pulp are called denticles or pulp stones;
- 2) they develop particularly often in the course of chronic pulpitis and post conservative treatment;
- 3) they develop particularly often in the course of acute pulpitis and post conservative treatment;
- 4) they can only be found in erupted teeth;
- 5) they most often occur in molars and lower incisors.

Correct answer is:

A. 1,2,4. **B.** 2,4,5. **C.** 3,4,5. **D.** 1,2,5. **E.** 1,3,5.

7. Choose correct statements regarding hypercementosis:

- 1) it occurs in case of recovery of bone loss caused by pathologic resorption;
- 2) it occurs in case of apex fracture healing;
- 3) it consists in increased growth of newly formed cementum layers, which is higher than under physiological conditions;
- 4) it may occur in teeth with normal, ill or necrotic pulp;
- 5) new cementum layers formed in fracture crevice fuse the fractured part.

Correct answer is:

A. 1,2,5. **B.** 2,4,5. **C.** 1,3,4. **D.** 3,4. **E.** only 3.

8. Choose correct statements regarding ankylosis:

- 1) it is excessive growth of bone and cementum and may lead to fusing of both these tissues;
- 2) it occurs in the course of healing of chronic apical tissue inflammations;
- 3) ankylosis forming is usually accompanied by periodontium atrophy;
- 4) it accompanies the healing of post extraction wounds or bone fracture;
- 5) undiagnosed may lead to root or alveolar process lamella fracture.

Correct answer is:

A. 2,3,4. **B.** 1,3,5. **C.** 2,3,5. **D.** 1,3,4. **E.** only 3.

9. Choose **false** statements regarding the cementoma:

- A.** it consists in limited form of calcium degeneration of periodontium.
- B.** it is an excessive growth of bones and root cementum.
- C.** may be single or multiple.
- D.** may occur in one or several teeth.
- E.** certain role in cementoma development is attributed to epithelial rests of Mallasez.

10. Choose correct statements regarding odontinoids:

- 1) they form both in erupted and impacted teeth;
- 2) they develop in teeth with vital tooth;
- 3) they are classified as progressive changes of the pulp;
- 4) both asymptomatic and symptomatic are indications for endodontic treatment;
- 5) they are features of dentin dysplasia type II.

Correct answer is:

- A.** 1,2,4. **B.** 1,3,5. **C.** 2,4,5. **D.** 1,2,5. **E.** 1,3,4.

11. Radiating pain is typical for which pulp or apical tissue disease?

- A.** reversible pulpitis.
- B.** irreversible pulpitis.
- C.** acute apical periodontitis.
- D.** chronic exacerbated apical periodontitis.
- E.** chronic apical periodontitis.

12. Which dentin layers and of which cavity walls should be removed in case of selective cavity preparation up to firm dentin:

- 1) firm from side walls;
- 2) firm from intrachamber wall;
- 3) soft from side walls;
- 4) soft from intrachamber wall;
- 5) hard from side walls.

Correct answer is:

- A.** 1,2,4. **B.** 3,4,5. **C.** 1,3,4. **D.** 2,3. **E.** 3,4.

13. Assign correct pulp state diagnosis to the vital treatment according to the guidelines of European Endodontic Society:

- | | |
|-------------------------------------|------------------------------|
| 1) reversible pulpitis; | a) indirect pulp capping; |
| 2) partially irreversible pulpitis; | b) direct pulp capping; |
| 3) irreversible pulpitis; | c) partial pulp amputation; |
| | d) complete pulp amputation; |
| | e) vital pulp extirpation. |

Correct answer is:

- A.** 1a,1b,2c,3e. **B.** 1a,1b,2c,3d,3e. **C.** 1a,2b,2c,2d,3e. **D.** 1a,2b,3c,3d,3e.
E. 1a,1b,1c,2d,3e.

14. Select complications or pathologies which do not give in to treatment and cause the loss of single root tooth:

- 1) vertical root fracture;
- 2) transverse root fracture in the apical area;
- 3) ankylosis and replacement resorption;
- 4) type A internal resorption;
- 5) tooth concussion.

Correct answer is:

- A.** 3,4. **B.** 2,5. **C.** 1,3. **D.** 1,5. **E.** 1,4.

15. What form does a metastasis to maxilla or mandible in its initial stage take?
A. periapical granuloma, which decreases in the course of endodontic treatment.
B. periapical granuloma, which does not heal in the course of endodontic treatment.
C. cementoma.
D. compressed bone inflammation.
E. ankyloses.

16. In which odontogenic tumor pulp cells can be found?

- A.** ameloblastoma.
- B.** odontinoid.
- C.** myxoma.
- D.** cementoma.
- E.** fibroma.

17. Choose correct statements regarding the group of ameloblastomas:

- 1) histologically benign;
- 2) clinically locally malignant or malignant;
- 3) clinically benign;
- 4) histologically malignant;
- 5) histologically benign or malignant.

Correct answer is:

- A.** 1,3. **B.** 1,2. **C.** 2,4. **D.** 2,5. **E.** 3,5.

18. Which structures may odontogenic cancers derive from?

- 1) ameloblastoma;
- 2) dentigerous cyst lining;
- 3) cementoma;
- 4) odontinoid
- 5) enamel epithelium persisting in the bone.

Correct answer is:

- A.** 1,3,4. **B.** 1,2,5. **C.** 2,4,5. **D.** 2,3,4. **E.** 3,4,5.

19. Which factor does not increase the risk of ameloblastoma metastasis?

- A.** patient's age.
- B.** illness duration.
- C.** local metastases.
- D.** patient's sex.
- E.** ameloblastoma type.

20. Choose correct statements regarding the air abrasion used for preparing the hard tooth tissues:

- 1) this technique is defined as kinetic cavity preparation;
- 2) this method is not used for preparing carious lesions located on approximal surface;
- 3) its use substitutes for etching the hard tooth tissues;
- 4) it may serve as a diagnostic tool in case of suspected fissure caries;
- 5) it does not damage the pulp.

Correct answer is:

- A.** 1,2,5. **B.** 3,4. **C.** 2,4,5. **D.** 1,4,5. **E.** all of the above mentioned.

21. Ozone in endodontics is used as gas or ozonated water. Choose correct statements concerning the use of ozone for root canals disinfection:

- 1) ozonated water is recommended during root canal preparation, preferably simultaneously with sodium hypochlorite rinsing;
- 2) ozonated water used during root canal preparation excludes simultaneous rinsing with sodium hypochlorite;
- 3) ozonated water is used after complete chemo mechanical preparation, during final rinsing with additional ultrasound activation;
- 4) ozone in gas state is used directly before the canal obturation, when the root canal is already dry;
- 5) before obturation, in order to dry the canal, ozone is used in gas state.

Correct answer is:

- A.** 1,5. **B.** 1,3,4. **C.** 3,5. **D.** 2,3,4. **E.** 2,4.

22. Iodine and its derivatives in the form of water solutions, which are strongly antiseptic, are used in root canal disinfection. Choose correct statements regarding those products:

- 1) they are used in RTC between visits;
- 2) they are characterized by slow loss of bactericidal features and can stay in the canal longer than 2 days;
- 3) its strong antiseptic action is caused by combining the iodine ions with proteins of bacterial cells and oxygen and iono-hydrogen release due to the reaction of iodine with water;
- 4) produced from vapor solutions they penetrate up to even 1000 μm into lateral root branches and dentin tubules;
- 5) in relatively small concentrations, they destroy bacteria and their toxins very quickly and effectively, but not without damaging live cells.

Correct answer is:

- A.** 1,2,4. **B.** 1,4,5. **C.** 1,3,4. **D.** 1,2,3,4. **E.** all of the above mentioned.

23. Choose **false** statement regarding new dentin infection in the course of irreversible pulpitis:

- A.** in such case microorganisms penetrate deep into into lateral root branches and dentin tubules, through which they even reach the cementum boundary.
- B.** the penetration depth of microorganisms does not exceed 50 to 10 μm .
- C.** chemo mechanical root canal preparation may result in complete removal of dentin infection.
- D.** disinfection in the form of antiseptic inserts is not needed.
- E.** obturation may be performed on the same visit.

24. Choose **false** statements regarding the circumferential root canal preparation:

- 1) this technique is not used for preparing very wide and straight canals;
- 2) this technique of file preparation is used in many methods, also in case of preparing very wide and straight canals;
- 3) top to bottom filing movements should be performed around the entire canal circumference;
- 4) to ensure safe dentin cutting, working instrument should not be pressed against the canal walls;
- 5) to ensure safe dentin cutting, working instrument should be lightly pressed against the canal walls.

Correct answer is:

A. 1,3. **B.** 2,3. **C.** 1,3,4. **D.** 1,5. **E.** 1,4.

25. Based on the classification of canal lumen width in certain roots we distinguish narrow, medium wide and wide canals. Medium wide canals include canals located in:

- 1) mandibular incisors;
- 2) maxillary incisors;
- 3) buccal roots of maxillary teeth;
- 4) maxillary and mandibular canines;
- 5) second maxillary premolars;
- 6) medial roots of mandibular molars.

Correct answer is:

A. 1,2. **B.** 1,2,4,5. **C.** 2,4,5. **D.** 1,3,6. **E.** 1,5.

26. Choose correct statements regarding the process of apex forming due to endodontic treatment:

- A.** the apexification occurs after treatment of immature teeth using vital extirpation with $\text{Ca}(\text{OH})_2$.
- B.** the percentage of properly formed roots as a result of endodontic treatment is higher after complete than partial pulp extirpation or vital amputation.
- C.** apexogenesis takes place also during the revitalization, when pulplike tissue, equivalent in function to healthy pulp, forms in canal.
- D.** Hertwig's Epithelial Root Sheath does not take part in apexogenesis.
- E.** all of the above answers are true.

27. During forming the apexes during the absence of vital pulp in canal may result in:

- 1) distorting the proper apex formation and appearance of complications;
- 2) delaying the apex formation;
- 3) complete halt of apex formation;
- 4) shortening the physiological length of the root;
- 5) development of inflammatory lesions in apical tissues, including pathologic resorption of hard tissues.

Correct answer is:

A. only 1. **B.** 1,2. **C.** 1,3,4. **D.** 2,3,4. **E.** all of the above mentioned.

28. Choose correct statements regarding the features of gutta-percha cones:

- 1) they are characterized by high plasticity, which facilitates their condensation, easiness of insertion and removal from the canal;
- 2) they are tissue-consistent, same as pure gutta-percha;
- 3) the more developed the apical surface connected with periodontium (which means with more sulcuses, grooves and fissures) is, the higher the cytotoxicity;
- 4) activGP (EndoSequence) is used in the form of single cone in combination with glass-ionomer sealer;
- 5) Greater Taper (with convergence degree of $<2\%$) are meant for obturating the roots prepared with rotary nickel-titanium instruments of greater taper.

Correct answer is:

A. 1,2. **B.** 1,2,3. **C.** 4,5. **D.** 1,2,5. **E.** all of the above mentioned.

29. Choose correct statements regarding the titanium cones used for obturation in permanent teeth roots:

- 1) they show high tissue biocompatibility;
- 2) they are not subject to corrosion;
- 3) they are highly visible on rtg;
- 4) the level of sealing of plastic material with titan cones is high;
- 5) they are used in very narrow canals, which cannot be prepared wide enough for gutta-percha obturation.

Correct answer is:

A. 1,2. **B.** 1,2,3. **C.** 4,5. **D.** 1,2,5. **E.** all of the above mentioned.

30. Instruments for root canal preparation are finished with clearly narrowing apex, which can be rounded and non-cutting (safety tip). Choose correct statements regarding such instruments:

- 1) such shaped instruments are meant for curved canals preparation;
- 2) thanks to the cutting edges, which are located on the apical surface, cutting the dentin is possible;
- 3) cutting edges located on the apical surface are grinded, which allows for smoothness of the surface;
- 4) non-cutting apex determines central location of the instrument in the canal, and hence its sliding alongside the natural canal lumen;
- 5) such apex type inhibits the central location of the instrument in the canal, and hence prevents from its wedging;
- 6) such apex type protects from complications in the form of drilled niche or canal perforation.

Correct answer is:

A. 1,2,4. **B.** 1,3,5,6. **C.** 1,2,5. **D.** 3,4,5. **E.** 1,3,4,6.

- 31.** Choose the **false** statement regarding the chronic apical periodontitis
- A.** chronic fibrous inflammations are characterised by significant bone resorption, which is clearly visible on the radiogram.
 - B.** discontinuity of the periodontium space is its initial radiological symptom.
 - C.** the reason for widening of the periodontium space (*dilatatio spatii periodontii*) is accumulating purulent exudate or developing granulation.
 - D.** the reason for discontinuity of the periodontium space is bundle bone resorption.
 - E.** all of the above-mentioned answers are false.

- 32.** The cause for widening of the periodontium space visible on radiogram may be:
- A.** chronic fibrous apical periodontitis.
 - B.** small-sized granulomatous inflammation.
 - C.** initial state of chronic purulent inflammation.
 - D.** chronic mechanical injury, causing the overload of periodontium.
 - E.** all of the above-mentioned answers are true.

- 33.** Systemic diseases which can be accompanied by pathologic resorption of mineralized tooth tissue (both internal and external) include:
- A.** cancers of facial part of the skull treated with radiotherapy.
 - B.** hyperthyroidism.
 - C.** Paget's disease.
 - D.** Gaucher disease.
 - E.** all of the above-mentioned answers are true.

- 34.** Root resorption is often undesirable sequelae of orthodontic treatment. Choose true statements regarding such complication:
- 1) such resorption is caused by chronic mechanical injuries;
 - 2) mandibular teeth are more susceptible than maxillary ones;
 - 3) it most often occurs in maxillary incisors;
 - 4) resorptions may be located in the root walls in the form of small cavities;
 - 5) resorptions do not lead to shortening of the apexes.

Correct answer is:

- A.** 1,5. **B.** 2,4. **C.** 3,5. **D.** 1,3,4. **E.** all of the above-mentioned.

- 35.** Root resorption of surrounding teeth may be caused by chronic mechanical injury in the form of pressure, which is exerted by:
- 1) impacted teeth;
 - 2) improperly erupting teeth;
 - 3) growing cysts;
 - 4) benign tumors;
 - 5) malignant tumors.

Correct answer is:

- A.** 1,2. **B.** only 3. **C.** 3,4. **D.** 4,5. **E.** all of the above-mentioned.

36. Cervical resorption is the form of external, progressive resorption, which develops always in the spot of epithelial attachment and gingival pocket formation. Such resorption does not occur:

- A.** after orthodontic treatment.
- B.** after perio treatment.
- C.** after maxillo-facial surgery treatment.
- D.** after bleaching discolored vital teeth with 8% urea.
- E.** after enamel etching and placing a filling in the cervical part of the crown.

37. Premature aging of the pulp and related decrease of its reparative and defensive forces may be a result of a detrimental effect of systemic local factors, which exhausted those forces. Indicate true statements regarding the premature aging of the pulp:

- 1) it occurs with metabolic disorders;
- 2) it occurs with endocrine systemic diseases;
- 3) it does not occur with nervous systemic diseases;
- 4) it does not occur with nutritional deficiencies;
- 5) it does not occur with vitamin deficiencies.

Correct answer is:

- A.** 1,2. **B.** 1,2,3. **C.** 3,4,5. **D.** 4,5. **E.** all of the above mentioned.

38. When diagnosing inflammations of alveolar bone in the course of apical periodontitis, one must consider that similar radiologic image may be observed in:

- 1) tumor metastasis;
- 2) giant cell granuloma;
- 3) bundle bone;
- 4) periosteum;
- 5) larger marrow cavities.

Correct answer is:

- A.** only 1. **B.** only 2. **C.** 3,4,5. **D.** 1,2,5. **E.** 3,5.

39. Pathologic periosteum atrophy may be caused by:

- 1) excessive overload of the tooth;
- 2) excluding the tooth from its function;
- 3) pressure on the periosteum exerted by developing tumors of the jaws;
- 4) hyperplasia of cementum and alveolar bone and subsequent fusion of those tissues.

Correct answer is:

- A.** 1,3. **B.** 2,3. **C.** 1,4. **D.** 2,4. **E.** all of the above mentioned.

40. During pulp vitality testing with electric test, there is a risk of false negative result. The reason for such result may be:

- 1) improper isolation and inaccurate drying of the teeth before testing;
- 2) partial pulp necrosis;
- 3) pulp necrolysis;
- 4) immature teeth with not formed apexes;
- 5) extensive mineral deposits in the canal.

Correct answer is:

- A.** 1,5. **B.** 2,3. **C.** 2,4,5. **D.** only 5. **E.** 1,4.

41. Calcium hydroxide dissociates to Ca^{2+} and OH^- ions after mixing it with water, which causes the permanent increase of alkaline reaction of non-hardening paste applied to the canal. Indicate true statements regarding the mechanism of action of such paste in the canal:

- 1) immediately after applying, saturation of the dentine with OH^- groups and destroying of microorganisms present in dentin tubules occurs;
- 2) mechanism of OH^- groups action consists in damaging the bacteria cell walls and destroying its protein structures;
- 3) $\text{Ca}(\text{OH})_2$ pastes are significantly inactivated by organic residues;
- 4) immediately after applying OH^- ions do not infiltrate deep into the dentin, due to the dentine's hydroxyapatites, which possess buffering capacity;
- 5) organic residue in the canal are easier to remove after $\text{Ca}(\text{OH})_2$ application, not only by rinsing solutions, but also hand instruments.

Correct answer is:

- A.** 1,2,4. **B.** 2,3. **C.** 2,4. **D.** 3,5. **E.** 2,4,5.

42. During filing of the curved canal "straightening" of its course often happens, which requires correction of the working length. Choose correct statement regarding the "straightening" of the canal edge:

- 1) it is a result of removing larger part of the dentin in the area of minor curvature;
- 2) it is a result of removing larger part of the dentin in the area of major curvature;
- 3) it results in elongating of the working length;
- 4) working length measure before canal preparation may prove to be too long after preparation by even 1 mm;
- 5) the file also undergoes straightening.

Correct answer is:

- A.** 1,4,5. **B.** 4,5. **C.** 2,5. **D.** 2,3,4. **E.** 1,3,4.

43. Choose contraindications for measuring the working length with radiologic methods:

- 1) very strong gag reflex provoked by the presence of an X-ray plate;
- 2) pregnancy (relative contraindication);
- 3) hip prosthesis;
- 4) pacemaker;
- 5) history of recent radiotherapy;
- 6) kidney transplant.

Correct answer is:

- A.** only 1. **B.** 1,2,5. **C.** 1,2,4. **D.** 2,3,5. **E.** all of the above mentioned.

44. Sclerotic/densifying bone inflammation is a form of bone-forming reaction, which consists in progressive bone calcification in the apex area. Choose true statements regarding this illness:

- 1) this disease is also referred to as sclerotic calcification of bone marrow;
- 2) it most often concerns the first maxillary molar;
- 3) it is more common in men;
- 4) it is a result of triggering the cementoblasts activity by pathogenic stimuli deriving from sick or necrotic pulp;
- 5) in advanced form, compact bone takes nature of cancellous bone;
- 6) it should be differentiated with cementoblastoma, due to very similar radiologic image.

Correct answer is:

A. 1,2,3. **B.** 3,4,5. **C.** 2,4. **D.** 1,6. **E.** all of the above mentioned.

45. In the end phase of preparing a cavity in tooth 47, accidental pulp exposure and injury happened in a patient anesthetized with anesthetic containing vasoconstrictors. Due to this anesthetic, pulp anemia occurred. Choose true statements regarding this situation:

- 1) the area of exposure is dark red in color;
- 2) the area of exposure is white-pink (pale) in color;
- 3) the bleeding is less intensive;
- 4) in such case there is slight bleeding, but hard to stop;
- 5) the bleeding may not occur.

Correct answer is:

A. 1,3,4. **B.** 3,4. **C.** 2,3. **D.** 2,3,5. **E.** 1,5.

46. Lidocaine is one of the most common local anesthetics. Decreased dose of this drug is used in case of:

- 1) kidney failure;
- 2) liver failure;
- 3) malignant disease;
- 4) pregnancy;
- 5) clinical symptoms of heart failure.

Correct answer is:

A. 1,2. **B.** 1,3. **C.** 2,3,4. **D.** 2,4. **E.** all of the above mentioned.

47. Administering an anesthetic with vasoconstrictor is contraindicated in a patient with:

- A.** controlled diabetes.
- B.** controlled hyperthyroidism.
- C.** bradycardia.
- D.** tumour deriving from the medulla of adrenal gland (phaeochromocytoma).
- E.** history of cerebral infarction in the last 10 years.

48. Choose **false** statement regarding the contraindications for using any biologic treatment method:

- A.** patient's mature age.
- B.** cachexia.
- C.** haemorrhagic conditions.
- D.** long term immunosuppressive therapy.
- E.** radiotherapy of the head and neck area.

49. Indicate true sentences concerning the border point, which determines the range of RTC:

- 1) smaller foramen;
- 2) apical constriction;
- 3) physiological foramen;
- 4) apical foramen.

Correct answer is:

A. only 4. **B.** only 3. **C.** only 2. **D.** 2,4. **E.** 1,2,3.

50. Indicate true sentences concerning the C type canal:

- 1) it is a most common morphologic anomaly of canal system observed in the first mandibular molar;
- 2) its diagnosis is based on clinical and radiologic examination;
- 3) its diagnosis is based solely on clinical examination;
- 4) the most accurate examination in such case is CBCT.

Correct answer is:

A. 1,4. **B.** 1,3. **C.** 2,4. **D.** 1,2. **E.** all of the above mentioned.

51. Choose instruments used for opening/preparing the root canal orifice:

- 1) Beuterlock drills;
- 2) Peeso-Largo;
- 3) Gates-Glidden;
- 4) Micro-Opener;
- 5) Endo Access Bur.

Correct answer is:

A. 1,2,3,5. **B.** 1,2,3. **C.** 4,5. **D.** 1,2,3,4. **E.** all of the above mentioned.

52. Which technique is used in treatment of reversible pulpopathies with laser biostimulation:

- A.** contact "point" method.
- B.** sweeping method.
- C.** contactless "point" method.
- D.** contact and contactless "point" method.
- E.** all of the above mentioned.

53. Indicate true sentences:

- 1) cerebral infarction up to 6 months before the dental visit is not considered a contraindication for using local anesthetics with vasoconstrictors;
- 2) myocardial infarction up to 6 months before the dental visit is considered a contraindication for using local anesthetics with vasoconstrictors;
- 3) tachycardia is not considered a contraindication for using local anesthetics with vasoconstrictors;
- 4) Cross-reactivity of adrenaline with psychotropics of MAO inhibitors group is considered a contraindication for using local anesthetics with adrenaline.

Correct answer is:

A. 2,3. **B.** 1,2,4. **C.** 2,4. **D.** 1,4. **E.** all of the above mentioned.

54. Indicate true sentences concerning intraligamentary anesthesia:

- A.** thin needles, of 31 mm length are used.
- B.** pressing the lever of pressure syringe on-time, deposits 0,6 ml of anesthetic.
- C.** the needle is introduced into the gingival sulcus at 45° angle to the tooth long axis.
- D.** the needle is introduced up to 3mm, until the contact with the edge of alveolar process bone.
- E.** all of the above-mentioned answers are correct.

55. Choose **false** statement concerning the radicular cyst:

- A.** in the literature, it is also referred to as periapical.
- B.** light amber fluid flowing from the canal may be a symptom of a cyst.
- C.** it is treated only with conservative-surgical method.
- D.** the fluid may be sterile.
- E.** true cyst is a lesion in which a communication with root canal is not present and it is completely enclosed by epithelium.

56. Choose correct statements:

- 1) hypercellular layer in the pulp is also known as zone of Weil;
- 2) zone of Weil is more distinctive in root pulp;
- 3) hypercellular layer is more distinctive in coronal pulp;
- 4) Korff fibers are formed from reticular fibers in the hypercellular layer;
- 5) Korff fibers are formed from reticular fibers in the hyporcellular layer.

Correct answer is:

- A.** 1,2,3,4. **B.** 1,3,4. **C.** 2,4. **D.** 3,5. **E.** 1,3,5.

57. It sets in around 12 minutes, it is based on calcium silicate, with strength parameters close to those of dentin and good marginal seal. This description applies to:

- A.** MTA.
- B.** ProRootMTA.
- C.** Biodentine.
- D.** Dycal.
- E.** MTA and Biodentine.

58. Choose true statements concerning the radiotherapy of malignant lesions of the head and neck area:

- 1) it may cause side effects in the form of alveolar bone damage;
- 2) it may cause side effects in the form pulp damage;
- 3) increase of side effects post radiotherapy is not related to the irradiation dose;
- 4) focal necrosis and degenerative changes may occur post radiotherapy;
- 5) extracting a tooth post radiotherapy is often the only right way.

Correct answer is:

- A.** 1,2,3,4. **B.** 1,2,5. **C.** 2,4. **D.** 1,2,4. **E.** 1,3,4,5.

59. Indicate the clinical cases that require immediate endodontic treatment:

- 1) acute irreversible pulpitis;
- 2) acute initial apical periodontitis;
- 3) acute purulent apical periodontitis
- 4) post-trauma teeth injury.

Correct answer is:

A. 1,2,3. **B.** only 4. **C.** 2,4. **D.** 1,2,3,4. **E.** 1,3.

60. Choose correct statements regarding the dental microscope:

- 1) green filter allows for increased contrast in bloodstained work field;
- 2) polarizing filter improves the visibility of small anatomical structures;
- 3) polarizing filter allows for increased contrast in bloodstained work field;
- 4) orange filter facilitates the identification of tissues affected with disease;
- 5) filters do not cause any changes in focus and depth of observed field.

Correct answer is:

A. 1,2,4. **B.** 1,2,5. **C.** 1,4,5. **D.** 2,4,5. **E.** 1,2,3.

61. According to the classification of Zarow and alia, the necessity for earlier orthodontic extrusion or lengthening the clinical crown is characteristic for restoration class:

- A.** 0 and 1
- B.** 1.
- C.** 2.
- D.** 3.
- E.** 4.

62. Products used for canal disinfecting, which are a mix of calcium hydroxide and water **do not** include:

- A.** Reogan.
- B.** Hypocal.
- C.** Apex Pasta.
- D.** Calasept.
- E.** Calcimol LC.

63. Choose true statements regarding the central giant cell granuloma:

- 1) it belongs to the group of benign tumours;
- 2) it belongs to the group of malignant tumours;
- 3) multifocal type may move apart the roots;
- 4) unifocal type does not move apart the roots;
- 5) unifocal type may resemble periapical granuloma.

Correct answer is:

A. 2,3,5. **B.** 1,3,5. **C.** 1,3,4. **D.** 2,4,5. **E.** 1,5.

64. Choose **false** statements regarding the squamous cell carcinoma:

- 1) it belongs to the group of benign tumours;
- 2) it belongs to the group of malignant tumours;
- 3) radiologic image resembles the honeycomb;
- 4) in initial state, the radiologic image may resemble osteomyelitis;
- 5) in advanced state, the image may resemble the bone damaging by periapical granuloma.

Correct answer is:

A. 2,3,5. **B.** 1,3,5. **C.** 1,3,4,5. **D.** 2,4. **E.** 1,5.

65. Choose correct statements regarding myxoma:

- A.** it often metastases to lungs .
- B.** it belongs to the group of benign tumours connected to the teeth.
- C.** it belongs to the group of benign tumours not connected to the teeth.
- D.** radiologic image resembles the honeycomb.
- E.** both C and D answers are correct.

66. Choose correct statements:

- 1) ameloblastoma belongs to the group of malignant tumours;
- 2) periosteal reaction occurs in malignant tumors;
- 3) periosteal reaction occurs in osteomyelitis;
- 4) bone resorption occurs in the course of cysts and neoplasms;
- 5) osteolysis stands for bone atrophy.

Correct answer is:

- A.** 2,3,5. **B.** 1,3,5. **C.** 1,3,4,5. **D.** 2,3,4. **E.** 1,5.

67. Environmental factors causing development disorders of enamel **do not** include:

- A.** drug-induced intoxications with tetracyclines.
- B.** drug-induced intoxications with anti-cancer drugs.
- C.** enteropathies – celiac disease.
- D.** vitamin D depended rickets.
- E.** infective diseases, such as rubella.

68. Choose correct statements:

- 1) orthoradial rule states that the central radius should be directed perpendicularly to the tangent of the dental arch fragment and in parallel to the detector and long axis of the tooth;
- 2) orthoradial rule states that the central radius should be directed in parallel to the tangent of the dental arch fragment and in parallel to the detector and long axis of the tooth;
- 3) orthoradial rule states that the central radius should be directed perpendicularly to the tangent of the dental arch fragment and perpendicularly to the detector and long axis of the tooth;
- 4) oblique projection is deviation of 20 grades of the central radius in the mesial or distal direction in the horizontal plane;
- 5) the most important use of oblique projections is revealing the root canals located in the lingual-vestibular plane.

Correct answer is:

- A.** 1,4,5. **B.** 2,4,5. **C.** 3,4,5. **D.** 3,4. **E.** 1,5.

69. Choose correct statements:

- 1) SLOB rule allows for easy identification of individual canals on radiogram;
- 2) KCP and CMCR methods are used in endodontics;
- 3) SonicSys Apporx system is used for canal orifices preparation;
- 4) Touch'n Heat apparatus is used for testing vitality.

Correct answer is:

- A.** 1,4. **B.** 3,4. **C.** only 1. **D.** 2,4. **E.** all of the above mentioned.

70. Choose the ingredient of toothpaste that act against calculus depositing:

- A.** coumarin derivative.
- B.** sodium laurilsulfate.
- C.** pyrophosphates.
- D.** strontium chloride.
- E.** humectants.

71. Choose correct statements:

- 1) in patient with low caries risk, after confirming lack of caries in radiologic examination, fissure observation is advised;
- 2) using air abrasion for “scout” opening the fissure is advised against
- 3) with air abrasion it is possible to effectively remove both enamel tissue and carious dentin
- 4) there is no possibility of stopping the initial caries under fissure sealants.

Correct answer is:

- A.** only 1. **B.** only 4. **C.** 1,4. **D.** 2,3. **E.** all of the above mentioned.

72. In case of developing osteolytic foci in the jaw bones not casually related to teeth or such, which did not completely heal despite proper endodontic treatment, cancer possibility should be eliminated through:

- A.** 3-year observation.
- B.** performing diagnostic images.
- C.** histopathologic examination.
- D.** 5-year observation and radiodiagnostics.
- E.** all of the above-mentioned are true.

73. Ameloblastoma may develop from:

- A.** epithelium of the dental lamina of stellate reticulum.
- B.** epithelial rests of Mallasez located in the periosteum.
- C.** epithelium of the dental lamina of stellate reticulum and epithelial rests of Mallasez located in the periosteum.
- D.** the epithelium lining the cyst, especially dentigerous ones.
- E.** all of the answers are true.

74. Tumor of high malignancy. Radiologic image shows no demarcation line separating the tumor from normal bone texture, loosening and teeth resorption. This description concerns:

- A.** ameloblastoma.
- B.** osteosarcoma.
- C.** central giant cell granuloma.
- D.** myxoma.
- E.** all of the above-mentioned.

75. Choose correct statements regarding the inhalation sedation:

- 1) there are no contraindications regarding age;
- 2) lack of patient-doctor cooperation is not a contraindication;
- 3) concentrations used in dentistry are: 30-40% or nitrous oxide and 60-70% oxygen
- 4) concentrations used in dentistry are: 60-70% or nitrous oxide and 30-40% oxygen
- 5) it may be used in patients with epilepsy.

Correct answer is:

- A.** 1,2,4. **B.** 1,2,3. **C.** 1,3. **D.** 1,4. **E.** 1,3,5.

76. Choose **false** statement regarding the process of “caries arrest”:

- A.** arresting the demineralization lesion causes its surface to become smooth and regain shine.
- B.** arrested lesions are called enamel scars.
- C.** arresting carious lesions is possible only on certain stages of caries development, especially as remineralised lesion in enamel is more susceptible to renewed demineralization attack than natural enamel.
- D.** in massive carious lesions, after enamel crack, dentin sclerotization may occur and subsequent arresting of the carious process, under the condition of preparing the carious focus and easy access of fluoride to dentin.
- E.** the condition of arresting the carious process is removing all of the areas of caries location and also maintaining very good hygiene and fluoridation.

77. Which of the below-mentioned factors **does not** influence the decrease the value of DMF index in examined population:

- A.** removing the carious dentin by preparing the carious cavities.
- B.** filling all of the carious lesions.
- C.** filling all of the non-carious lesions.
- D.** qualifying and extracting teeth, which mineralised tissues have been destroyed due to caries.
- E.** implementing anti-caries prophylaxis, adequate to the oral cavity state of examined patients.

78. Finish the sentence “filling with compound materials, in class II cavities are prepared starting with...” :

- A.** occlusal surface, adjusting the marginal edge using tungsten and diamond burs.
- B.** proximal surface with Arkansas stones.
- C.** assigning the anatomic details on occlusal surface with diamond burs or carborundum stones.
- D.** removing the wedge, checking the proximal point and its possible adjustment, with abrasive discs.
- E.** remove the wedge, check the tangent point and possibly correct it using abrasive discs.

79. In a 20-year-old patient, demineralized lesion in enamel, around class I filling which has been placed a year before is observed. Intraoral examination revealed additional numerous calculus depositions and retention of bacterial plaque around fillings. The proper diagnosis would be:

- A. circular caries.
- B. secondary internal caries.
- C. rampant caries.
- D. residual caries.
- E. secondary internal caries.

80. Which features characteristic for internal inflammatory resorptions, which allow for differentiation with external resorption, are visible on radiogram?

- 1) significant regularly demarcated radiolucency;
- 2) irregular obscuration with jagged edges;
- 3) location symmetrical to the tooth axis;
- 4) location asymmetrical to the tooth axis;
- 5) visible connection with canal lumen;
- 6) significant separation from canal lumen.

Correct answer is:

- A. 1,3,4. B. 1,3,5. C. 2,3,5. D. 2,4,5. E. 2,4,6.

81. Indicate the type of resorption, in which development, the pulp **does not** play a role and in most cases is vital. It is caused by cementum damage and detachment of dentin fibers or their necrosis due to iatrogenic injury:

- A. cervical.
- B. lateral inflammatory of the root.
- C. apical inflammatory.
- D. ankyloses.
- E. replacement.

82. Indicate a feature, which the carious bacteria **do not** possess:

- A. they produce acids from carbohydrates which are subject to fermentation (they are acidogenic).
- B. they may thrive in acidic environment (they are acid-resistant).
- C. they possess the ability of adhering to the tooth surface.
- D. they give the matrix a gel-like consistence, which allows for tooth adherence.
- E. they are characterised by various adaptive ability, such as producing better adapted mutants.

83. Indicate which tooth disorder is described below:

- it is caused by chronologic hypo mineralisation of systemic origin;
- it may be caused by for example pregnancy and perinatal disorders, dioxins present in mother's milk;
- it involves at least 1 permanent molar or/and 1/3rd of the incisal surface of the incisors
- defects may be in the form of opaque changes in the colour, from white to beige or dark yellow
- the teeth are brittle and susceptible to caries development, sensitive.

- A.** Turner's tooth.
- B.** limited enamel opacity.
- C.** fluorosis.
- D.** systemic hypoplasia.
- E.** MIH.

84. Choose correct statements regarding alleged denticles:

- 1) their anatomy is similar to dentin;
- 2) they consist usually of concentric running lines of calcification
- 3) odontoblasts are present in the peripheral part of the lesion;
- 4) calcified cells are present in the central parts;
- 5) they are located in the area of apical foramen;
- 6) they are surrounded with pulp and dentin.

Correct answer is:

- A.** 1,3,5. **B.** 2,4,6. **C.** 2,3,6. **D.** 1,4,5. **E.** 2,3,5.

85. Choose such requirements for materials used for biologic pulp treatment, which are fully satisfied by products based on calcium hydroxide:

- 1) tissue biocompatibility;
- 2) antibacterial and anti-inflammatory action;
- 3) odontotropic action;
- 4) good dentin and filling material adherence;
- 5) resistance to chemical agents;
- 6) resistance to mechanical forces;
- 7) good RTG visibility.

Correct answer is:

- A.** 1,2,3,6. **B.** 2,3,4. **C.** 1,2,3,7. **D.** 1,2,3,5. **E.** 1,2,5,7.

86. Choose hallmarks of MTA:

- 1) good mechanical strength;
- 2) biocompatibility;
- 3) good marginal adherence;
- 4) it resorbs and dissolves in body fluids;
- 5) it does not exhibit odontotropic action;
- 6) it has antibacterial and antifungal action.

Correct answer is:

- A.** 1,2,4,5. **B.** 1,2,3,5. **C.** 1,2,3,6. **D.** 2,3,4,5. **E.** 3,4,5,6.

87. Conversion ratio of monomer to polymer is significant for the filling durability, due to the essential influence on physical-mechanical properties of the composite material. Indicate the consequence of conversion:

- 1) giving the composite material dark yellow color;
- 2) composite material shrinkage;
- 3) decrease of the material's volume;
- 4) increase of spreading of the material in the cavity at the last stage of polymerization.

Correct answer is:

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

88. Finish the sentence "In oblique layering technique of restoration of cavities in lateral teeth, subsequent layers of material are..." .

- A.** gradually introduced into the cavity, from one wall to the other.
- B.** placed horizontally one on another.
- C.** placed gradually wedge-sized and polymerised only from the occlusal side.
- D.** placed at random and polymerised.
- E.** placed on dentin surface without any contact with opposite walls and polymerised thorough a matrix applied earlier in the area of gingival edge.

89. Indicate correct statement regarding the term of "caries stabilization":

- A.** removal of dental calculus and applying of varnishes containing fluoride.
- B.** preparing and filling with glass-ionomer cement all of the deep and medium-deep cavities during single visit.
- C.** preparing and filling all of the deep and medium-deep cavities during single visit.
- D.** filling all of the cavities with amalgam.
- E.** preparing and filling all of the cavities and applying remineralisation treatment of non-cavity caries.

90. A 35-year-old patient referred to the dental office with following symptoms concerning the painful tooth: week-long spontaneous pain, which increases during horizontal body position, short periods of pause in pain severity, hot drinks intensify the pain. Indicate correct diagnosis and course of treatment:

- A.** reversible pulpitis - indirect capping.
- B.** reversible pulpitis - direct capping.
- C.** reversible pulpitis - vital extirpation.
- D.** closed irreversible pulpitis – vital or mortal extirpation.
- E.** open irreversible pulpitis – vital or mortal extirpation.

91. A 30-year-old patient referred to the dental office with following symptoms concerning the painful tooth:

- 1) week-long pain without the involvement of external stimuli;
- 2) week-long pain;
- 3) pain increases during horizontal body position;
- 4) continuous pain without any pauses, with changing intensity;
- 5) hot drinks intensify the pain.

Name the types of pain described by the patient:

- A.** 1 – spontaneous pain, 2- old pain, 3- night pain, 4 – continuous pain with intermissions, 5 – provoked pain.
- B.** 1 – spontaneous pain, 2- fresh pain, 3- radiating pain, 4 – night pain, 5 – provoked pain.
- C.** 1 – spontaneous pain, 2- fresh pain, 3- night pain, 4 – continuous pain with intermissions, 5 – provoked pain.
- D.** 1 – spontaneous pain, 2- fresh pain, 3- radiating pain, 4 – night pain, 5 – provoked pain.
- E.** 1 – radiating pain, 2- old pain, 3- pulsing pain, 4 – night pain, 5 – provoked pain.

92. Choose true statements regarding the morphology of the roots of central and lateral mandibular incisors.

- A.** in most cases (around 94%) – 1 root, 1 canal, in rare cases (3-6%) 2 roots, 2 canals (labial and lingual).
- B.** in most cases (around 60-70%) – 1 root, 1 canal, rarely (around 40-30%) 1 root, 2 canals (labial and lingual).
- C.** usually 2 roots and 2 canals - labial and lingual.
- D.** in most cases (around 94%) – 1 root, 2 canals (labial and lingual).
- E.** usually 1 root and 2 canals (labial and lingual).

93. Choose true statements regarding rinsing the canals during endodontic treatment:

- 1) total volume of NaOCl used during preparing one canal should not be smaller than 10 ml;
- 2) total volume of NaOCl used during preparing one canal should not be smaller than 6-7 ml;
- 3) contact time of 2% NaOCl during endodontic treatment should be at least 30 minutes;
- 4) contact time of 2% NaOCl during mechanical endodontic treatment may shorter, appropriate to the working time of rotary instrument;
- 5) after complete canal preparation, smear layer must be removed;
- 6) after complete canal preparation, smear layer should be left, and then used in the adhesion of sealant to the canal walls.

Correct answer is:

- A.** 1,4,5. **B.** 1,3,5. **C.** 1,3,6. **D.** 2,3,5. **E.** 2,3,6.

94. Finish the sentence concerning canal obturation: in single cone and lateral condensation method of cold gutta-perch cones, in order to introduce the sealant, one needs to use:

- A. Lentulo needle.
- B. Drux spiral.
- C. only hand instruments.
- D. Reciproc Blue.
- E. SAF.

95. Which changes develop in periapical tissues in chronic purulent inflammation during radiologic examination?

- A. slight, occasionally uneven expansion of periosteal space, osteosclerotic rim.
- B. extensive dilution, >8 mm in transverse diameter, most often of spherical or oval shape, clearly demarcated, with visible osteosclerotic rim.
- C. discontinuity of periosteal space, dilution focus of uneven, poorly visible border.
- D. dilution focus, <8 mm in transverse diameter, more or less sharply demarcated, with presence of osteosclerotic rim.
- E. more or less extensive focus of bone compaction around the apex.

96. Choose indications for single visit endodontic treatment:

- 1) pulpopathies in vital pulp with uncomplicated canal system;
- 2) initial acute periapical periodontitis;
- 3) anterior and premolar teeth with traumatic crown fracture, requiring immediate restoration;
- 4) cases, in which estimated time of treatment is not very long;
- 5) asymptomatic molars with necrotic pulp and chronic inflammatory lesions, with accompanying resorption of periapical bone, but without present fistula;
- 6) pulp necrosis and inflammatory lesions of periapical tissues (with present fistula) in a tooth with uncomplicated canal system.

Correct answer is:

- A. 1,3,4,6. B. 1,2,5,6. C. 1,3,4,5. D. 2,3,4,6. E. 2,4,5,6.

97. Match correct names of dental dam clamps with their photos below:

- 1) wingless clamp;
- 2) double curved clamp for anterior teeth;
- 3) winged clamp.



Correct answer is:

- A. 1c,2b,3a. B. 1a,2b,3c. C. 1b,2a,3c. D. 1a,2c,3b. E. 1c,2a,3b.

98. Choose correct statements regarding the resistance form of cavity shape:

- 1) the shape given to a prepared tooth to enable the restoration and remaining tooth structure to withstand masticatory stress;
- 2) it concerns the cavities restored with non-adhesive material (amalgam);
- 3) the shape given to a prepared tooth to enable the restoration to hold and withstand masticatory stress;
- 4) with regard to the restoration, relation of extent of the cavity to its depth should be directly proportional;
- 5) elimination of right and acute angle (rounding them) in the transition between walls;
- 6) floor of the cavity should be flat.

Correct answer is:

- A.** 1,2,6. **B.** 3,4,5. **C.** 1,2,5. **D.** 1,4,5. **E.** 3,5,6.

99. Choose correct statements regarding tertiary dentin:

- 1) it is formed between pulp and dentin in a localized manner, restricted to projection of stimulus effect;
- 2) it is formed as a reaction to pathologic external stimulation (such as attrition, abrasion, erosion, caries, preparation and restoration of the cavity);
- 3) it contains higher number of tubules, arranged curvily or irregularly, sometimes with no tubules and sometimes looking like bone tissue;
- 4) it can be divided into reactionary and reparative;
- 5) it is formed during tooth development, until the end of apexification;
- 6) it constitutes the most outer layer of dentin, located by the dentoenamel junction.

Correct answer is:

- A.** 1,3,4. **B.** 2,4,6. **C.** 1,3,5. **D.** 2,5,6. **E.** 1,2,4.

100. Indicate tests which belong to the group of pulp state examination:

- 1) electric;
- 2) thermal;
- 3) Smreker's;
- 4) anesthetic;
- 5) biting;
- 6) dentin drilling.

Correct answer is:

- A.** 2,4,5. **B.** 1,2,4,5. **C.** 2,4,6. **D.** 1,2,3,6. **E.** 1,2,4,6.

101. Choose true statement regarding inflammation of the pulp:

- A.** the direct cause of inflammation are bacterial cells, such as for example *Prevotella*.
- B.** T-cells produce biologically active lymphokines, which show cytotoxic activity upon contact with antigen.
- C.** immune response cells begin phagocytic action as first in inflammatory hyperaemic pulp.
- D.** B-cells activate lysosomal enzymes.
- E.** chemotactic factors released from bacterial cells degrade the fibers and basic pulp substance.

102. Choose application of laser Doppler flow meter (LDF):

- A. it examines responsiveness of tooth tissues to mechanical stimuli.
- B. it allows for verifying absence or presence of blood flow in the pulp.
- C. it allows for determining pathologic teeth mobility.
- D. it differentiates the sound of examined tooth.
- E. it is useful in locating radiating pain.

103. Stage 2 according to Billings' root caries classification means:

- A. discoloration from yellow to brown.
- B. surface defect <0.5 mm.
- C. surface defect >0.5 mm.
- D. surface defect <1 mm.
- E. surface defect >1 mm.

104. Second stage of fluorosis according to Dean's fluorosis index means very mild state. Choose its most characteristic features:

- A. very slight change in enamel's transparency, usually in the form of few white dots.
- B. small, opaque, paper-white spots scattered irregularly over the tooth but involving less than 25% of the tooth surface.
- C. opaque spots involving as much as 50% of tooth.
- D. speckled mottling.
- E. the image of so called "corroded" tooth.

105. Which radiograms can be used for root canal length measurement?

- A. sagittal plane on CT.
- B. panoramic.
- C. OPG.
- D. coronal plane on CT.
- E. axial plane on CT.

106. Choose contraindications for biologic pulp treatment:

- 1) decreased pulp reaction to vitality tests;
- 2) physiological tooth resorption;
- 3) pulp bleeding lasting more than 5 minutes during biologic treatment attempt
- 4) patient's mature age
- 5) spontaneous, radiating pain lasting post stimulation.

Correct answer is:

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

107. Choose true statements regarding class II direct pulp capping:

- 1) the procedure should be performed after non-selective preparation of carious dentin;
- 2) the procedure should be performed after selective preparation of carious dentin;
- 3) it is advised for the procedure to be performed in magnification;
- 4) in order to achieve hemostasis, pellets soaked in NaOCl solution should be used;
- 5) in order to achieve hemostasis, pellets soaked in NaCl solution should be used.

Correct answer is:

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

108. Choose adequate procedure in case of pushing through the sodium hypochlorite to periapical tissues during endodontic treatment in patients with mild clinical reaction:

- 1) cold compress in first 24 hours;
- 2) administering NSAIDs (such as paracetamol) in order to alleviate pain;
- 3) administering antihistamine drugs in order to decrease oedema;
- 4) administering systemic antibiotics;
- 5) administering systemic corticosteroids.

Correct answer is:

A. 3,4,5. **B.** 1,2,4. **C.** 1,2,3. **D.** 1,4. **E.** only 1.

109. Choose true statements concerning the dental pellicle:

- 1) rate of formation is dependent on saliva composition;
- 2) thickness of the film is the same on all tooth surfaces;
- 3) it acts as diffuse membrane;
- 4) it protects the teeth from abrasion, erosion and attrition;
- 5) it is formed around 24 hours after teeth brushing.

Correct answer is:

A. all of the above-mentioned. **B.** 1,3,4. **C.** 2,3,5. **D.** 2,4. **E.** 1,3,4,5.

110. A patient referred to the dental office due to pain of tooth 36. A diagnosis of irreversible pulpitis has been established, basing on clinical and radiologic examination. Due to lack of time, vital extirpation has been performed only in distal canal in local anaesthesia. Which procedure should be implemented during next visit?

- A.** applying devitalizing paste on the orifices of all other canals.
- B.** applying $\text{Ca}(\text{OH})_2$ insert to the distal canal and administering NSAIDs in case of lasting pain.
- C.** applying insert of polyantibiotic-corticosteroids mix to the chamber.
- D.** applying insert of polyantibiotic-corticosteroids mix to the chamber and administering systemic antibiotics and painkillers in case of symptoms exacerbation.
- E.** applying insert of polyantibiotic-corticosteroids mix and iodoform to the distal canal and mesial canals' orifices.

111. Face skin anemia is one of the complications post local anesthesia used in dentistry. Choose true statements regarding this complication:

- 1) it is a consequence of intravascular administration of local anesthetic with or without vasoconstrictors;
- 2) it resolves in around 5 to 45 minutes;
- 3) in order to avoid this complication, aspiration in at least two dimensions is advised;
- 4) performing aspiration is always an effective method of avoiding this complication;
- 5) such complication occurs after around 30 to 60 minutes after intravascular administering of the anesthetic.

Correct answer is:

A. 1,3,4,5. **B.** 1,2,3,5. **C.** 2,3,4. **D.** 2,3. **E.** 4,5.

112. Choose true statements concerning pulp sensibility testing to cold with thermal test:

- 1) using ethyl chloride, it is advised to wait a while after soaking a cotton pellet, until frost appears, and subsequently placing it against the tooth;
- 2) provoked pain, decreasing after 1 to 2 seconds after discontinuing the stimulus, is a correct reply of a healthy pulp;
- 3) cotton pellet soaked with ethyl chloride should be placed against the tooth surface for not longer than 5 seconds;
- 4) for thermal testing no drying of the tooth surface is required;
- 5) lack of pulp reaction to thermal stimulus always means presence of necrotic pulp.

Correct answer is:

- A.** 2,3,4. **B.** 1,4. **C.** 1,3. **D.** 2,5. **E.** only 1.

113. Choose true sentences concerning primary and secondary access preparation in incisors:

- 1) trephination point in maxillary incisors in adolescents is located in lingual tubercule;
- 2) during orifice's preparation in maxillary incisors, dentin forming the coronal protuberance should be removed from the labial side;
- 3) mandibular incisors in type II configuration according to Verucci, vestibular is the main canal and lingual is an accessory;
- 4) in case of presence of two canals in mandibular incisors, endodontic enlargement should be moved towards the incisal edge and lingual direction;
- 5) outline of endodontic enlargement in all incisors is of oval shape, and its size is dependent on patient's age.

Correct answer is:

- A.** 1,2,3. **B.** 2,4. **C.** 3,4. **D.** 2,3,5. **E.** 1,4,5.

114. Choose true statements regarding teeth treated with biologic methods:

- A.** questionable result of vitality tests during control visit is an indication for endodontic treatment.
- B.** on control radiologic examination, condition of apical and marginal periodontium should be assessed.
- C.** no pain always proves positive result of biologic treatment.
- D.** spontaneous pain of treated tooth may last up to 2 weeks from the end of treatment.
- E.** first control radiologic examination is advised to be performed after 4 weeks after end of treatment .

115. Choose true statements regarding rinsing the canals with NaOCl during endodontic treatment:

- 1) total volume of NaOCl used during preparing one canal should be at least 1 to 2 ml;
- 2) contact time of 2% solution against canal root walls should be at least 30 minutes;
- 3) too long rinsing of canal with NaOCl leads to weakening of canal walls and increases the risk of complications during mechanical preparation;
- 4) in infected canals, one should always use preparations of high concentration;
- 5) it is advised to rinse the canal with preparation of low concentration after using chelators.

Correct answer is:

- A.** 1,2,3. **B.** 2,4,5. **C.** 2,5. **D.** 1,3. **E.** 1,4.

116. Choose correct properties of zinc oxide eugenol cements:

- A.** average mechanical strength, pH within range of 7, good thermal and electrical isolation.
- B.** antifungal and anaesthetic activity, low solubility in water, moderate harmfulness towards pulp cells.
- C.** ability to stimulate the secondary, but not reparative, dentin layering, antifungal and anaesthetic activity.
- D.** good enamel and dentin adhesion, long-term cavity persistence, low solubility in water.
- E.** causing discoloration in mineralized tooth tissues, especially after repeated insertion to the cavity, good enamel and dentin adhesion, low solubility in water.

117. Choose true statements regarding preparations based on calcium dioxide:

- A.** non-hardening: in indirect capping – stimulation of odontoblasts to forming physiologic secondary dentin.
- B.** hardening: in direct capping - stimulation of odontoblasts to forming pathologic secondary dentin.
- C.** non-hardening: in pulpotomy - stimulation of odontoblasts to forming reparative dentin.
- D.** hardening possess less alkaline pH, resulting in dentine bridge formation, which provide very tight closing, impermeable to bacteria.
- E.** non-hardening in contact with injured pulp result in surface three-layer necrosis (from dressing to odontoblasts): contact, clotting, necrolytic.

118. VII, and also VIII generation of adhesive systems, is characterized by:

- A.** single-step treatment, self-etching properties of mineralized tooth tissues, two components.
- B.** single-step treatment, self-etching properties of mineralized tooth tissues, one component.
- C.** two-step treatment, self-etching properties of mineralized tooth tissues, two components.
- D.** two-step treatment, self-etching properties of mineralized tooth tissues, one component.
- E.** necessity for enamel etching, without the requirement of dentin etching, single-step treatment, two components.

119. Postnatal systemic causes of developmental enamel disorders of enamel and dentin include:

- A.** congenital heart defects, hypothyroidism, excess of fluoride, measles.
- B.** haemolytic disease, bronchial and pulmonary infection, prematurity.
- C.** ankylosis, vitamin B deficiency, pregnancy intoxication, prolonged birth.
- D.** acute osteomyelitis, prematurity, vitamin E deficiency.
- E.** vitamins A, E and D deficiencies, prematurity, haemolytic disease.

120. Choose true statements:

- 1) in visual assessment, hypersensitive dentin does not differ from insensitive, it differs however with the intensity of harmless external stimulus;
- 2) post-treatment dentin sensitivity is caused by polymerization shrinkage;
- 3) hypersensitivity of lateral teeth dentin restored with composite material is usually caused by occlusal overloading or marginal microleakage;
- 4) dentin hypersensitivity after bleaching vital teeth is caused by forming diffusion canals reaching dentin and increased enamel porosity;
- 5) tooth pain post crown cementing, especially with glass-ionomer cements, is caused by polymerization shrinkage of material used for cementing.

Correct answer is:

A. 1,2,3. B. 1,3,4. C. 1,4,5. D. 2,4,5. E. 3,4,5.

121. Choose true statements:

- 1) bacteria metabolizing carbohydrates to butyric or propanoic acidify the environment less than bacteria which produce acetic, lactic and formic acid;
- 2) synthesis of intracellular polysaccharides is one of defense mechanisms of *S. mutans* in a situation of high supply of carbohydrates in diet;
- 3) in aerobic conditions *S. mitis* and *S. sanguis* produce hydrogen peroxide and ethanol under influence of pyruvate dehydrogenase;
- 4) in anaerobic conditions and low supply of carbohydrates in diet streptococci, lactic acid bacilli and actinomyces produce formic and acetic acid and ethanol via formate lyase pathway;
- 5) in a situation of high and stable supply of carbohydrates, oral cavity is dominated by *S. sanquis* and *S. salivarius* .

Correct answer is:

A. 3,4,5. B. 2,3,5. C. 1,3,5. D. 1,4,5. E. 1,2,4.

122. Choose true statements:

- 1) risk of caries increases with not stimulated low salivary secretion, which is associated with the removal rate of eliminating the carbohydrates from oral cavity;
- 2) myeloperoxidase and peroxidase are enzymes synthesized by vesicular cells of salivary glands, they are characterized by double mechanism of action: antibacterial and neutralizing hydrogen peroxide;
- 3) dominant buffering system of saliva are inorganic phosphates, with less important bicarbonates and proteins;
- 4) very low stimulated secretion is observed at the secretion rate below 0,7 ml/min;
- 5) statherin and anionic proteins rich in proline determine, apart from calcium and fluoride, remineralizable saliva properties.

Correct answer is:

A. 1,2. B. 2,3,4. C. 4,5. D. 1,2,5. E. 1,4.

123. 18-year-old patient referred to the dental office. Medical history revealed last visit to be a year ago. The patient suffers from type 1 diabetes. Clinical examination revealed approximal caries on distal surface of tooth 24 and white spots in the cervical areas of teeth 11, 12, 21 and 22, visible without drying the teeth surface. White spots in the cervical areas are hard, without visible defects of enamel. Radiologic examination (bitewing X ray) revealed: cavity on distal surface of tooth 24, involving whole enamel and more than 1/3rd of dentin. Also, cavity of proximal surface of tooth 25, involving whole enamel and less than 1/3rd of dentin. Choose true statements regarding conservative treatment:

- A.** invasive treatment (cavities preparation) of all of the mentioned teeth (11,12,21,22,24,25) and restoration with composite material; control visit in 8 months, radiologic re-examination in 12 months.
- B.** invasive treatment of tooth 24 and restoration with composite material; oral hygiene-dietary instruction and clinical/radiologic examination of carious lesions in 6 months.
- C.** invasive treatment of teeth 24 and 25 and restoration with composite material; infiltrative treatment of white spots of teeth 11,12,21 and 22; oral hygiene-dietary instruction; control visit in 3 months; radiologic re-examination in 6 months.
- D.** invasive treatment of all of the mentioned teeth (11,12,21,22,24,25); restoration of teeth 24 and 25 with composite material and cervical cavities of teeth 11,12,21,22 with glass-ionomer material.
- E.** prophylactic treatment (oral hygiene-dietary instruction, clinical/radiologic examination of carious lesions in 6 months) due to patient's young age.

124. Caries detection in dental office requires teeth drying. This procedure causes:

- A.** changes in electrical resistance value of carious tissues in comparison to healthy tissues.
- B.** changes in fluorescence intensity of carious tissues in comparison to healthy tissues.
- C.** changes in transillumination of carious tissues in comparison to healthy tissues.
- D.** changes in light refractive index of carious tissues in comparison to healthy tissues.
- E.** changes in opalescence of carious tissues in comparison to healthy tissues.

125. Choose true statements regarding therapeutic guidelines, according to the CAMBRA caries risk index:

- 1) very high caries risk warrants control visits every 4 months, bite wing X ray every 6 months, saliva examination during first visit in dental office, recommending pastes with casein and amorphous peptide once a day;
- 2) very low caries risk warrants control visits every 6 to 12 months; bite wing X ray every 24 to 36 months, saliva examination during first visit in dental office, optional use of pastes with casein and amorphous peptide;
- 3) moderate caries risk warrants control visits every 4 to 6 months, bite wing X ray every 18 to 24 months, saliva examination during every visit in dental office, optional use of pastes with casein and amorphous peptide;
- 4) very high caries risk warrants control visits every 3 to 4 months, bite wing X ray every 3 months, saliva examination during first visit in dental office, optional use of pastes with casein and amorphous peptide.

Correct answer is:

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

126. Choose true statements regarding cavity restoration with amalgam:

- 1) in order to restore the cavity, proper angles need to be secured: surface-cavity amalgam should not exceed 110° ($90-110^\circ$), and marginal should not be lower than 50° ($50-100^\circ$);
- 2) in occluso-proximal restoration angle between the floor and cavity wall should be rounded or obliqued;
- 3) minimal thickness of small extent amalgam on occlusal surface should be 2mm, with 2.5 to 3mm diameter, in case of extensive restoration – correspondingly more;
- 4) procedure of edges smoothing is performed only in case of cavities restored with amalgam;
- 5) zinc oxide eugenol cements may be used as single primer for amalgam restorations.

Correct answer is:

- A.** 1,2,5. **B.** 2,4,5. **C.** 3,4,5. **D.** 2,3,4. **E.** 1,3,5.

127. Choose true sentences regarding clinical aspects of cavity restorations:

- 1) closed sandwich technique is used when all of the cavity edges are located in enamel; glass-ionomer cement restores dentin and composite restores enamel;
- 2) in a situation where gingival edge is located within root cementum/dentin, glass-ionomer cement is left in gingival area without covering it with composite – open sandwich;
- 3) in case of open sandwich technique, gingival edge is obliquely cut on proximal surface;
- 4) in occluso-gingival layer technique, layers of material are placed horizontally, sequentially one by one;
- 5) in bucco-lingual layer technique, first layer of composite is placed on dentin surface without contact with opposite cavity walls, subsequent layers are introduced in the shape of a wedge.

Correct answer is:

- A.** 1,3,5. **B.** 1,2,4. **C.** 3,4,5. **D.** 2,4,5. **E.** 1,3,4.

128. Choose true statements regarding esthetic restoration of anterior teeth:

- A.** choice of restoration colour begins with determining the colour of dentin in medial $1/3^{\text{rd}}$ of dried tooth crown, where enamel is thin enough, to not influence the colour estimation.
- B.** application of darker colour in cervical region and lighter in proximal region causes the tooth to be wider and shorter, whereas reverse application causes the tooth to be narrower and longer.
- C.** tooth crown seems wider, among other, when labial curve is increased in mesio-distal plane, lateral edges are moved more medially, proximal contact is located more lingually, size of incisal triangles is decreased.
- D.** crown seems longer, among other, when labial curve is decreased in mesio-distal plane, lateral edges are moved more laterally, proximal contact is located more labially, size of incisal triangles is decreased.
- E.** enamel colour is chosen as first and estimated in gingival part of the crown, and shade of enamel mass in $1/3^{\text{rd}}$ cervical crown.

- 129.** Choose true statements describing translucent layer of early carious lesion in enamel:
- A.** contents of pores in this layer are 2 to 4 %, pores are of various size; smaller pores are not penetrated by quinoline, thus remain empty; in this layer mostly remineralisation processes take place.
 - B.** it does not occur in every carious spot; it is adjacent to healthy tooth, visible only during immersing the tooth in quinoline, it is without structure and more porous than healthy enamel; loss of mineral part in this layer is 1% and concerns only magnesium and carbonates.
 - C.** it is the widest layer of early carious lesion; loss of mineral substance from 5% on circumference to 25 % in the centre of the lesion, its coloration results in the fact that water particles penetrating the pores are of other refraction index than enamel.
 - D.** its width is 20 to 50 μm ; volume of pores is 1%; it arises as a result of alternate processes of demineralization and remineralization; it is visible in polarized light during immersing the preparation in water.
 - E.** diffusive canals for circulation and exchange of ions are present in this layer; mineral loss and pores volume is 1 %; small pores may be formed through demineralization of places up until now not infected or constitute places of big pores repair.

- 130.** According to the NAtthoo tooth discoloration classification type 2 (N2) occurs when:
- A.** colourless material adheres to the enamel surface, exposed dentin, cementum and undergoes a chemical reaction as a result of which discoloration is formed (food rich in carbohydrates and hydro chlorhexidine).
 - B.** colourless material changes colour after adhering to enamel surface, exposed dentin, cementum, darkening in time (food colorants).
 - C.** chromogen adheres to enamel surface, exposed dentin, cementum and causes similar discoloration (tee, coffee, metals).
 - D.** deficiency of isomerase porphobilinogen or erythroblasts during erythropoiesis, which results in accumulation of uroporphyrin and coproporphyrin in dentin.
 - E.** due to developmental disorders of gastrointestinal tract layering of bile pigments in tissue of developing tooth.

- 131.** In initial developmental state ameloblastoma is differentiated with:
- A.** epithelial granuloma.
 - B.** chronic fibrous inflammation.
 - C.** radicular cyst.
 - D.** ordinary granuloma.
 - E.** chronic periapical tissue inflammation with osteosclerosis.

132. First phase of phased carious dentin removal involves:

- A.** removal of carious dentin from lateral walls of cavity up to hard dentin and leaving compacted dentin on chamber wall, and subsequently placing final restoration.
- B.** removal of carious dentin from lateral walls of cavity up to hard dentin and leaving soft dentin on chamber wall, and subsequently placing final restoration.
- C.** removal of carious dentin from lateral walls of cavity up to hard dentin and leaving soft dentin on chamber wall, and subsequently placing temporary filling for 6 to 12 months.
- D.** removal of carious dentin from lateral walls of cavity up to hard dentin and leaving compacted dentin on chamber wall, and subsequently placing temporary filling for 6 to 12 months.
- E.** complete removal of soft and compacted carious dentin from lateral and chamber cavity walls up to reaching hard dentin, and subsequently placing temporary filling for 6 to 12 months.

133. Jaw bones, especially mandible, tend to be places for metastases of following cancers: lungs, breast, thyroid, kidneys. Initial stage of metastasis development affecting root apexes is confusingly similar to:

- A.** dentigerous cyst.
- B.** true radicular cyst.
- C.** cementoma.
- D.** compound odontoma.
- E.** periapical granuloma.

134. Choose true statements:

- 1) pain to percussion is a symptom typical for acute inflammations and chronic exacerbated periapical tissues, accompanied by forming exudate;
- 2) in initial phase of acute inflammation, pain to biting is slight and exacerbates just as it adopts purulent character;
- 3) in chronic purulent periapical tissue inflammation, tooth reacts with pain only to horizontal percussion;
- 4) acute pulpitis, with strong vascular reaction results in occurring of slight sensitivity of tooth to vertical percussion;
- 5) out of periapical tissue lesions of atraumatic etiology, highest mobility is caused by chronic purulent inflammation.

Correct answer is:

- A.** 1,2,3. **B.** 2,3,5. **C.** 3,4,5. **D.** 1,2,4. **E.** 2,4,5.

135. Choose true statement regarding the location of oedema and penetration of abscess in the course of periapical tissue inflammation of mandibular and maxillary teeth:

- A.** place of oedema formation in the course of periapical tissue inflammation of mandibular incisors are lower lip, submandibular area, sometimes neck; penetration of abscess is always located on alveolar process from the vestibular side.
- B.** place of oedema formation in the course of periapical tissue inflammation of mandibular canines are lower lip, submandibular area, sometimes neck; penetration of abscess is always located on alveolar process from proper oral cavity.
- C.** place of oedema formation in the course of periapical tissue inflammation of maxillary premolars are upper lip, part of buccal region adhering the nose, infraorbital area, eyelid, mouth angle; abscess always penetrates to maxillary sinus.
- D.** place of oedema formation in the course of periapical tissue inflammation of maxillary canines are upper lip, part of buccal region adhering the nose, infraorbital area, eyelid, mouth angle; penetration of abscess is always located from proper oral cavity side.
- E.** place of oedema formation in the course of periapical tissue inflammation of third mandibular molar is cheek; penetration of abscess is always located from proper oral cavity side.

136. It is a certain variation of periapical tissue inflammation in adolescent patients. It most often concerns mandibular molar, although often forms by the apexes of other molars and premolars. It is more frequent in women. It is an osteoforming reaction, essence of which is progressive bone calcification located in the apex area. Stimulation of osteoblasts leads to thickening and fusing bone trabeculae. Excessive accumulation of mineral salt leads to reduction of marrow cavities lumen or their complete obliteration. Sometimes root resorption occurs, despite preserving pulp vitality. Above-mentioned description concerns:

- A.** cementum hypertrophy.
- B.** cementum regrowth.
- C.** sclerotic osteomyelitis.
- D.** ankyloses.
- E.** chronic fibrous periapical tissue inflammation.

137. Choose true statements characterising chronic purulent periapical tissue inflammation:

- 1) it may occur as primary chronic form as a consequence of irritation with pathogenic triggers from root canal;
- 2) in diffuse form, increased mobility of tooth may occur;
- 3) physical examination reveals enlarged, hard, painless and non-movable lymph nodes;
- 4) it is not accompanied by any subjective symptoms;
- 5) it is characterized by presence of active or passive fistula and no purulent exudate from canal.

Correct answer is:

- A.** 1,3,4. **B.** 1,2,3. **C.** 3,4,5. **D.** 1,2,5. **E.** 2,4,5.

138. Due to labial and palatal protuberance, crown of this tooth is more extensive and less flattened in the vestibulo-palatal dimension. Pulp has biggest dimensions on the bordered or chamber and root. It ends with one horn descending towards incisal point. It usually has 1 root with type I canal. Sporadically this tooth also has two type I canals or also two canals in one root. Lumen of canal is wide and of oval cross-section, but narrows in 1/4th periapical. Apex may be deflected labially. Above-mentioned description applies to morphology of chamber and canal system of:

- A. maxillary medial incisor.
- B. maxillary lateral incisor.
- C. maxillary canine.
- D. mandibular canine.
- E. first mandibular premolar.

139. Choose true sentences:

- 1) according to European Endodontic Society, teeth with reversible pulpitis, in which caries in radiologic image does not involve 1/4th of pulpal dentin, require selective single or two-stage removal of carious dentin;
- 2) second stage of so called phased removal of carious dentin consist in removal of carious dentin up to hard dentin (not scratchable with a probe) and final cavity restoration;
- 3) according to European Endodontic Society, non-selective removal of carious dentin it at present treatment of choice of deep caries;
- 4) treatment of deep caries located on occlusal surface using indirect capping is easier and more predictable than the results of treatment of multi-surface cavities;
- 5) at present, material of choice in indirect capping methods is oxide eugenol cement.

Correct answer is:

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

140. Choose true statements regarding procedures and substances used for root canal rinsing:

- 1) canal may be rinsed with ultrasounds already at widening the canal to 15;
- 2) symptom of weak toxic effect of NaOCl is usually pain of treated tooth to biting and percussion;
- 3) chlorhexidine, which as rinsing solution is especially recommended in cases, where canal system was prone to oral cavity environment;
- 4) applying gel containing EDTA releases the dentist from using EDTA solution after complete canal preparation;
- 5) repeated rinsing with EDTA and NaOCl solutions is considered inappropriate.

Correct answer is:

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

141. Choose **false** statement regarding pulp and periosteal tissue:

- A. it stays vital in case of pulpitis.
- B. it may preserve vitality in case of acute initial periapical tissue inflammation.
- C. it may stay vital in cases of acute initial purulent periapical tissue inflammation.
- D. it may stay vital in cases of acute purulent periapical tissue inflammation.
- E. it dies in cases of chronic and chronic exacerbated purulent periapical tissue inflammation.

142. In which patients before endodontic treatment (chronic purulent periapical tissue inflammation) would you apply antibiotic prophylaxis?

- A.** patients with artificial heart valve prosthesis implanted percutaneously; after haemorrhagic stroke, with rheumatic disease.
- B.** with left heart hypoplasia, chronic kidney deficiency, acyanotic heart disease.
- C.** with type 2 diabetes, after an episode of infective endocarditis, with Tetralogy of Fallot.
- D.** after myocardial infarction, with implanted artificial joints, tuberculosis.
- E.** acyanotic heart disease, after myocardial infarction, with implanted heart pacemaker.

143. Revitalisation results in:

- A.** developing hard barrier in the area of apex and recreating neurovascular tissues in its lumen.
- B.** apexogenesis accompanied by Hertwig epithelial sheath and dental sack.
- C.** thickening of walls, canal narrowing, forming of apex of regular build and creating pulplike tissue.
- D.** stimulating apex formation by long-term and repeated use of odontotropic preparations.
- E.** obliteration of periapical area which constitutes natural barrier.

144. Teeth treated with revascularisation method during first visit. Following patter of canal rinsing is advised (guidelines of American Endodontic Treatment):

- A.** 2 ml of 5 % sodium hypochlorite, 5 ml of 0,9% sodium chloride and 20 ml of 2 % chlorhexidine; all of rinsing solutions should remain in canal for 5 minutes.
- B.** 10 ml of 5 % sodium hypochlorite for 10 minutes, 20 ml of 17% EDTA.
- C.** 20 ml of 1.5 % sodium hypochlorite for 20 minutes, 5 ml of 0,9% sodium chloride and 20 ml of metronidazole.
- D.** 20 ml of 1.5 % sodium hypochlorite for 5 minutes, 5 ml of 0,9% sodium chloride and 20 ml of 17% EDTA, 5 ml of 0,9% sodium chloride.
- E.** 20 ml of 17% EDTA, 6 % of sodium hypochlorite for 2 minutes, 5 ml of 0,9% sodium chloride.

145. In case of revitalisation procedure, activation of factors present in dentin takes place under the influence of:

- A.** 17% EDTA - 20 ml .
- B.** 2 % chlorhexidine – 10ml.
- C.** 1.5% sodium hypochlorite – 20 ml.
- D.** alternate rinsing with 17% EDTA and 5 % sodium hypochlorite.
- E.** calcium hydroxide in the form of paste.