INDIRA GANDHI GOVT. DENTAL COLLEGE, JAMMU.

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NOTICE

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The question paper along with the answer key of the written examination conducted on 27.11.2026 for the post of Senior Resident/Registrar in the Department of Conservative Dentistry & Endodontics, Indira Gandhi Government Dental College, Jammu, is enclosed herewith as Annexure "A".

Any query or objection regarding the question paper or answer key, if any, may be communicated through the official e-mail (principaliggdc-jk@nic.in) on or before 28.11.2026 up to 05:00 P.M. No query/objection shall be entertained after the stipulated date and time.

Administrative Officer,
Indira Gandhi Govt. Dental College,
Jammu.

No:- IGGDCJ/Estt/GD/ 3198-3200 Dated: - 27.11.2026

Copy to the:-

1. Commissioner/Secretary to Govt., Health & Medical Education Department. Civil Secretariat, Jammu for kind information.
2. Computer Programmer to upload the above Notice on College Website.
3. Notice Board.

Annexure - "A"

INDIRA GANDHI GOVT. DENTAL COLLEGE, JAMMU

MCQ Based Examination

For the Post of Tutor/Demonstrator/Registrar/Senior Resident

PG Department of Conservative Dentistry & Endodontic

Time:- 60 Minutes | Dated:- 27-11-2026

Roll No:- _____ | Maximum Marks:- 300

Read the following instructions: -

1. Before you start the examination, check that your answer sheet is free from printing defects, i.e. misaligned contents, faded print, missing print, repetitive defects, smeared or smudged. Ask the invigilator to replace your answer sheet if it has printing defects.
2. In the upper section, clearly fill the Roll No as mentioned in the admit card and do signature on each sheet.
3. Read each question carefully. Using a Black/Blue ball Pen, Tick ✔ the corresponding of the correct answer/option .
    a. Only Tick ✔ Do NOT cross, or underline . An incorrect mark may produce improper results.
    b. Four marks will be awarded for correct answer. There will be a negative marking of one mark for incorrect choice and for opting more than one answer(s). Further zero mark will be awarded for not attempting the question. Your answers to the MCQs must be marked on the sheet provided.
4. Avoid unnecessary Tick ✔ marks on the answer sheet. Stray marks on or near the Tick Mark ✔ may affect your score as the same shall be considered as wrong option.
5. Do NOT fold or crease your answer sheet.

Signature of the Candidate

RECRUITMENT WRITTEN TEST

Conservative Dentistry & Endodontics | Sr. Resident / Tutor / Demonstrator / Registrar

Total Questions: 75

1. Gnarled enamel is primarily located in which region of the tooth?

A. Cervical region
B. Proximal surface
C. Cusp tips and incisal edges
D. Middle third of the crown

2. The most reliable clinical indicator of pulpal status among the following is:

A. A single thermal test response
B. A combination of history, examination and sensibility tests
C. Radiographic appearance alone
D. Percussion response alone

3. The predominant initiator of dentinal caries is:

A. Acidogenic biofilm metabolism of fermentable carbohydrates
B. Direct invasion by viruses
C. Mechanical abrasion
D. Pulpal inflammation

4. The smear layer produced during instrumentation is composed mainly of:

A. Organic and inorganic debris
B. Only bacteria
C. Only collagen
D. Only calcium hydroxide

5. Which of the following best explains why micro-CT is preferred over clinical CBCT for evaluating the exact percentage of untouched root canal walls after rotary instrumentation?

A. Micro-CT eliminates the need for ionizing X-ray radiation by using optical laser scanning.
B. Micro-CT achieves sub-25 μm isotropic voxel sizes, minimizing partial volume averaging and enabling accurate 3D co-registration of pre- and post-operative scans.
C. Micro-CT can be performed directly on living patients in a dental chair within 10 seconds.
D. Micro-CT relies on Hounsfield Units (HU) calibrated specifically for human enamel and gutta-percha.

6. EDTA is primarily used in endodontics to:
A. Dissolve organic tissue
B. Remove the inorganic component of the smear layer
C. Provide sustained intracanal substantivity
D. Dissolve gutta-percha

7. A major limitation of chlorhexidine as a sole root canal irrigant is that it:
A. Cannot dissolve organic tissue
B. Has no antimicrobial activity
C. Is strongly acidic
D. Cannot contact dentin

8. The combination of sodium hypochlorite and chlorhexidine should be avoided because it may form:
A. Calcium hydroxide
B. A precipitate that is potentially toxic
C. A stable chelate
D. A neutral saline solution

9. The principal purpose of a glide path is to:
A. Enlarge the apical foramen
B. Create a smooth, reproducible pathway for shaping instruments
C. Remove the smear layer
D. Determine working length radiographically

10. The most appropriate method to establish working length is:
A. Electronic apex locator supplemented by radiographic assessment
B. Preoperative radiograph alone
C. Tactile sensation alone
D. Average tooth length

11. MTA was developed in

A. University of British Columbia
B. Loma Linda University
C. Boston University
D. James Lind University

12. In Hyflex CM file system, CM stands for

A. Central Memory
B. Centric Memory
C. Controlled Memory
D. Command Memory

13. VPT stands for

A. Vital Polyp Treatment
B. Vital Pulp Therapy
C. Vital Pin Therapy
D. Vital Painless Therapy

14. The principal advantage of heat-treated NiTi alloys is improved:

A. Radiopacity
B. Flexibility and cyclic fatigue resistance
C. Solubility
D. Cutting of enamel

15. Dakin's Solution is

A. Sodium Hypochlorite
B. CHX
C. EDTA
D. Hydrogen Peroxide

16. Which factor most increases the risk of sodium hypochlorite accident?
A. Loose needle and low pressure
B. Binding of the irrigation needle with forceful delivery
C. Use of side-vented needle
D. Rubber dam isolation

17. Component of TAP responsible for tooth discoloration is:
A. Ciprofloxacin
B. Metronidazole
C. Minocycline
D. All of the above

18. The primary purpose of intracanal medication between appointments in selected cases is to:
A. Replace chemomechanical preparation
B. Reduce residual microbial load
C. Strengthen enamel
D. No specific reason

19. Calcium hydroxide exerts its antimicrobial effect mainly through:
A. Low pH
B. High pH and hydroxyl ions
C. Chelation of iron
D. Release of chlorine

20. Which organism is most commonly cultured from failed root canal treatments (secondary/persistent apical periodontitis)?
A. Porphyromonas gingivalis
B. Enterococcus faecalis
C. Candida albicans
D. Staphylococcus aureus

21. The most appropriate material for direct pulp capping in a carious exposure in a restorable tooth with controlled bleeding is generally:

A. Zinc oxide-eugenol alone
B. Calcium-silicate cement
C. Amalgam
D. Temporary stopping

22. Which of the following is NOT a recognized indication for CBCT in endodontic treatment planning?

A. Routine pre- and post-treatment imaging on all standard, uncomplicated cases
B. Assessment of suspected external or internal root resorption
C. Evaluation of teeth with complex or anomalous root morphology (e.g., C-shaped canals)
D. Investigation of non-healing or persistent symptoms following previous root canal therapy

23. Q. Radiation caries is primarily caused by:

A. Direct radiation damage to the crystalline structure of enamel and dentin
B. Radiation-induced destruction of the major salivary glands leading to severe dry mouth
C. Direct bacterial mutation from scattered X-rays in the oral cavity
D. Increased intake of acidic medications during cancer treatment

24. A recognised limitation of traditional grey MTA is:

A. Lack of bioactivity
B. Potential tooth discolouration and handling difficulty
C. Failure to set in moisture
D. High solubility in all conditions

25. Which component in the powder of conventional Glass Ionomer Cement is responsible for releasing fluoride?

A) Calcium fluoro-aluminosilicate glass
B) Zinc oxide
C) Quartz
D) Silver-tin alloy

26. The principal purpose of a ferrule in a restored endodontically treated tooth is to:
A. Improve pulp vitality
B. Provide resistance to fracture by bracing the remaining tooth structure
C. Increase canal disinfection
D. Prevent apical periodontitis

27. In the context of the restorative material Ariston pHc, what does the designation "pHc" stand for?
A. Pro-Healing Composite
B. Polymer Hybrid Ceramic
C. Post-Harden Catalyzed
D. pH-Controlled

28. The ideal post space preparation should preserve:
A. At least 4 mm of apical gutta-percha
B. No apical filling material
C. Only 1 mm of apical filling
D. The entire canal filling

29. The principal function of an intraradicular post is to:
A. Reinforce the root
B. Retain the core when coronal tooth structure is insufficient
C. Seal lateral canals
D. Replace a ferrule

30. A major advantage of fibre posts over metal posts is:
A. Higher elastic modulus than dentin
B. More favourable stress distribution due to an elastic modulus closer to dentin
C. No need for bonding
D. Guaranteed prevention of root fracture

31. The most appropriate radiographic technique for assessing periapical healing in routine follow-up is:

A. Standardised periapical radiography
B. Panoramic radiography only
C. Occlusal radiography only
D. Bitewing radiography

32. In Endodontics, LEO stands for

A. Lethal Endodontic Organ
B. Large Evaginatus Organelle
C. Lesion of Endodontic Origin
D. None of the above

33. A classic sign of vertical root fracture in a root-filled tooth may be:

A. Generalised horizontal bone loss only
B. Isolated narrow deep periodontal probing defect
C. Diffuse enamel hypoplasia
D. Pulp stone

34. The most appropriate immediate management of an avulsed permanent tooth is:

A. Allow it to dry
B. Replant promptly when appropriate, after assessing contraindications
C. Scrub the root surface vigorously
D. Store in alcohol

35. What is the primary goal of a Regenerative Endodontic Procedure (REP)?

A. Complete obturation of the root canal system with gutta-percha and sealer
B. Regeneration of the entire pulp-dentin complex (cellularity, vascularity, and tissue) within an existing tooth
C. Induction of an artificial calcified apical barrier using mineral trioxide aggregate (MTA)
D. Permanent devitalization and sterilization of root dentin

36. An immature permanent tooth with necrotic pulp and open apex may be managed by:
A. Conventional obturation with a large gutta-percha cone only
B. Regenerative endodontic procedure or apexification, based on case factors
C. Extraction in every case
D. Vital pulp therapy despite necrosis

37. In Vital Pulp Therapy (VPT), RDT **refers to which of the following, and what is its critical threshold for pulp protection?**
A. Root Development Time; ideally completed within 6 months of apexification
B. Remaining Dentin Thickness; an RDT of 0.5 mm or less significantly increases pulp inflammation risk
C. Reparative Dentin Threshold; requires at least 2.0 mm of tertiary dentin before permanent restoration
D. Residual Decay Tissue; must be completely removed using a high-speed bur before liner placement

38. The most common cause of persistent intraradicular infection after root canal treatment is:
A. Residual microorganisms in complex anatomy
B. Excessive crown height
C. Use of rubber dam
D. Radiographic angulation

39. The most frequent cause of endodontic treatment failure associated with missed anatomy in maxillary molars is failure to locate:
A. Distobuccal canal
B. Second mesiobuccal canal
C. Palatal canal
D. Main mesiobuccal canal

40. The configuration most commonly associated with mandibular first molar mesial roots is:
A. One canal only
B. Two canals that may merge or remain separate
C. Four palatal canals
D. A single C-shaped canal in all cases

41. The PAI (Periapical Index) in endodontics is a:

A. 4-point ordinal radiographic scoring system

B. 5-point ordinal radiographic scoring system

C. 3-point ordinal radiographic scoring system

D. 6-point ordinal radiographic scoring system

42. A C-shaped canal system is most commonly associated with:

A. Maxillary central incisors
B. Mandibular second molars
C. Maxillary canines
D. Mandibular central incisors

43. The main objective of endodontic surgery is to:

A. Remove the entire root
B. Manage apical disease when orthograde treatment is inadequate or impractical
C. Shortcut to Conventional Endodontocs
D. None of the above

44. Grossman's Formula in Endodontics is used in the process of

A. Vital Pulp therapy
B. Calculating the size of apical foramen
C. Working length determination
D. Compressive forces measurement

45. The most appropriate management of a restorable tooth with symptomatic irreversible pulpitis and mature apex is generally:

A. Extraction in every case
B. Vital pulp therapy in selected cases or root canal treatment based on diagnosis and clinical judgement
C. Antibiotics alone
D. Occlusal adjustment alone

46. Systemic antibiotics for symptomatic apical periodontitis in an otherwise healthy patient without systemic involvement are:

A. Always indicated
B. Generally not indicated; local operative management and analgesia are prioritised
C. A substitute for drainage
D. Required before every root canal

47. A person suffering from xerostomia is more likely to have:

A. Cemental caries
B. Decrease in dental caries
C. Increase in lesions of dental caries
D. Arrested caries

48. Which of the following is contraindicated beneath composite resins as liner/ base?

A. Calcium hydroxide
B. Zinc oxide-eugenol
C. Glass ionomer
D. None of the above

49. Polymerisation shrinkage stress in resin composites is influenced by:

A. C-factor and material/curing variables
B. Patient's movement during treatment
C. Tooth eruption sequence
D. Radiographic exposure

50. The C-factor is the ratio of:

A. Cavity surface area to bonded surface area
B. Bonded to unbonded surfaces
C. Enamel to dentin thickness
D. Filler to resin volume

51. The oxygen-inhibited layer on a resin composite is:
A. A superficial layer with unreacted monomers that can aid interlayer bonding
B. A layer of hydroxyapatite
C. A permanent contaminant that must always be removed
D. A bacterial biofilm

52. Who was the first to describe that the mixture of oil of clove and zinc oxide forms a plastic mass and hardens?
A. EJ Molnar
B. JF Thomas
C. EC Chisolm
D. JK Avery

53. The smear layer on dentin can reduce dentin permeability by:
A. Occluding dentinal tubules
B. Increasing tubule diameter
C. Dissolving peritubular dentin
D. Removing the odontoblastic process

54. Following methods prevent microleakage around porcelain inlay:
A. Closer fit
B. Use of dual cure resin cement
C. Both the above
D. None of the above

55. Microabrasion involves the use of:
A. Sulfuric acid
B. Acetic acid
C. Phosphoric acid
D. Hydrochloric acid

56. Resin-modified glass ionomer cement differs from conventional glass ionomer by including:
A. A resin polymerisable component
B. No acid-base reaction
C. Metallic amalgam
D. Epoxy sealer

57. 'Command set' refers to dental material that hardens by:
A. Chemical reactions of base and catalyst
B. Chemical reaction by acid-base reaction
C. Photo (light) activation
D. Autopolymerisation

58. An EBA cement refers to a:
A. Modified calcium hydroxide cement
B. Resin modified glass ionomer cement
C. Modified zinc oxide-eugenol cement
D. Non-eugenol zin oxide cement

59. The Pomeranz et al. classification in endodontics is used to categorize the

A. Second Mesiobuccal canal in Maxillary first molars

B. Extra canal in Mandibular lateral incisor

C. Middle mesial canal in Mandibular first molar

D. C shaped canal in Mandibular second molar

60. The principal mechanism of fluoride in caries prevention is:
A. Reducing bacterial sugar intake
B. Enhancing remineralisation and reducing demineralisation, with effects on bacterial metabolism
C. Dissolving enamel
D. Blocking salivary flow

61 One hypothesis of pain modulation is based upon the inhibitory-excitatory interaction of afferent fiber synapses. This theory is called:

A. Gate control theory
B. Pattern theory
C. Specificity theory
D. Variable pain theory

62. Which sequence most accurately describes the principal hydration reaction of a hydraulic calcium-silicate-based endodontic sealer?

A. Calcium silicate hydration → calcium silicate hydrate gel and calcium hydroxide formation
B. Calcium silicate hydration → polymerisation of methacrylate resin
C. Calcium silicate hydration → immediate formation of metallic calcium
D. Calcium silicate hydration → dissolution of all dentinal collagen

63. A researcher compares the percentage of middle mesial canals detected using two micro-CT protocols with different voxel sizes. The higher-resolution protocol identifies more fine canal communications. Which methodological explanation is most appropriate?

A. Smaller voxel dimensions improve the ability to resolve fine anatomical structures, subject to contrast and segmentation limitations
B. Larger voxels always provide better spatial resolution
C. Voxel size has no effect on anatomical detection
D. Micro-CT automatically identifies all anatomical communications regardless of threshold selection

64. In a tooth with a sinus tract of endodontic origin, tracing with a gutta-percha point can help:

A. Measure occlusal vertical dimension
B. Identify the likely source tooth radiographically
C. Determine pulp blood flow
D. Assess enamel thickness

65. The most appropriate approach to a suspected cracked tooth includes:

A. Bite test, transillumination, magnification and periodontal probing
B. Only panoramic radiography
C. Routine CBCT for all cases
D. Pulp test alone

66. A root canal irrigation study reports that ultrasonic activation improves debris removal compared with conventional needle irrigation. Which additional experimental design feature would most strengthen the causal interpretation that activation itself produced the improvement?

A. Use only one experimental specimen

B. Standardise irrigant concentration, volume, temperature, activation time and needle/cannula placement, with appropriate randomisation and blinded outcome assessment

C. Allow each operator to select their preferred irrigation protocol

D. Use different irrigants in each group without controlling exposure time

67. Which study design is generally best suited to evaluate the efficacy of an intervention while minimising confounding?

A. Case report
B. Randomised controlled trial
C. Cross-sectional survey
D. Ecological study

68. Human dental pulp stem cells (DPSCs) are particularly valuable in regenerative endodontics because of their:

A. Exclusive differentiation into osteoclasts
B. Multipotency, clonogenic potential and capacity for odontogenic differentiation
C. Inability to respond to growth factors
D. Complete absence of immunomodulatory properties

69. Quorum sensing in polymicrobial endodontic biofilms refers to:

A. Random bacterial movement without chemical communication
B. Cell-density-dependent regulation of gene expression through signalling molecules
C. Exclusive activation of host immune cells
D. Complete inhibition of extracellular polymeric substance production

70. In an in-vitro cytotoxicity study, the MTT assay primarily estimates:

A. Bacterial motility
B. Metabolic activity of viable cells
C. Material radiopacity
D. Setting time

71. Which cellular population is primarily responsible for the resorptive activity in external cervical resorption?

A. Odontoblasts
B. Clastic cells expressing osteoclast-associated markers
C. Ameloblasts
D. Cementoblasts exclusively

72. Which analytical technique is most appropriate for identifying the crystalline phases formed during hydration of a calcium-silicate-based endodontic material?

A. Scanning electron microscopy alone
B. Energy-dispersive X-ray spectroscopy alone
C. X-ray diffraction (XRD)
D. Optical microscope

73. The principle of ALARA/ALADA in dental imaging means:
A. Use the highest possible exposure
B. Optimise exposure to achieve diagnostic information with appropriately low dose
C. Avoid all imaging
D. Repeat images until ideal

74. A fundamental ethical requirement before enrolling a patient in clinical research is:
A. Verbal assurance from a colleague
B. Voluntary informed consent after adequate information
C. Payment alone
D. Publication approval

75. According to Brännström's hydrodynamic theory, dentin hypersensitivity is primarily caused by:

A. Direct bacterial invasion of the pulp in every case
B. Fluid movement within dentinal tubules stimulating pulpal sensory nerve endings
C. Complete destruction of odontoblasts
D. Increased enamel thickness

ANSWER KEY & REFERENCES

Conservative Dentistry & Endodontics Recruitment Written Test

Answer key

1. C- Cusp tips and incisal edges. Ref: Orban's oral histology and embryology textbook

2. B — A combination of history, examination and sensibility tests. Ref: Grossman's Endodontics Practice textbook

3. A — Acidogenic biofilm metabolism of fermentable carbohydrates. Ref: Essentials of Preclinical Conservative Dentistry textbook

4. A — Organic and inorganic debris. Ref: Cohen's Pathways of the Pulp textbook

5. B — Micro-CT achieves sub-25 µm isotropic voxel sizes, minimizing partial volume averaging and enabling accurate 3D co-registration of pre- and post-operative scans. Ref: Cohen's Pathways of the Pulp textbook

6. B — Remove the inorganic component of the smear layer. Ref: Cohen's Pathways of the Pulp textbook

7. A — Cannot dissolve organic tissue. Ref: Ingle's Endodontics textbook

8. B — A precipitate that is potentially toxic. Ref: Cohen's Pathways of the Pulp textbook

9. B — Create a smooth, reproducible pathway for shaping instruments. Ref: Ingle's Endodontics textbook

10. A — Electronic apex locator supplemented by radiographic assessment. Ref: Grossman's Endodontics Practice textbook

11. B — Loma Linda University Ref: Mineral Trioxide Aggregate: Properties and clinical applications textbook

12. C — Controlled Memory Ref: Ingle's Endodontics textbook

13. B — Vital Pulp Therapy. Ref: Essentials of Preclinical Conservative Dentistry textbook

14. B — Flexibility and cyclic fatigue resistance. Ref: Ingle's Endodontics textbook

15. A — Sodium Hypochlorite. Ref: Cohen's Pathways of the Pulp textbook

16. B — Binding of the irrigation needle with forceful delivery. Ref: Ingle's Endodontics textbook

17. C — Minocycline Ref: Cohen's Pathways of the Pulp textbook

18. B — Reduce residual microbial load. Ref: Endodontic Therapy-Weine textbook

19. B — High pH and hydroxyl ions. Ref: Endodontic Therapy-Weine textbook

20. B — Enterococcus faecalis. Ref: Cohen's Pathways of the Pulp textbook

21. B — Calcium-silicate cement. Ref: Essentials of Preclinical Conservative Dentistry textbook

22. A.- Routine pre- and post-treatment imaging on all standard, uncomplicated cases. Ref Endodontic radiology textbook

23. B — Radiation-induced destruction of the major salivary glands leading to severe dry mouth. Ref: Shafer's text book of Oral Pathology

24. B — Potential tooth discolouration and handling difficulty. Mineral Trioxide Aggregate: Properties and clinical applications textbook

25. A — Calcium fluoro-aluminosilicate glass. Ref: Philip's science of dental materials textbook

26. B — Provide resistance to fracture by bracing the remaining tooth structure. Ref.: Sturdevant's art and science of Operative Dentistry textbook

27. D. pH-Controlled. Ref: Basic Dental Materials textbook

28. A — At least 4 mm of apical gutta-percha. Ref: Cohen's Pathways of the Pulp textbook

29. B — Retain the core when coronal tooth structure is insufficient. Ref: Cohen's Pathways of the Pulp textbook

30. B — More favourable stress distribution due to an elastic modulus closer to dentin. Ref: Cohen's Pathways of the Pulp textbook

31. A — Standardised periapical radiography. Ref: Endodontic radiology textbook

32. C. Lesion of Endodontic Origin. Ref: Cohen's Pathways of the Pulp textbook

33. B — Isolated narrow deep periodontal probing defect. Ref: Grossman's Endodontics Practice textbook

34. B — Replant promptly when appropriate, after assessing contraindications. Ref: Ingle's Endodontics textbook

35. B. Regeneration of the entire pulp-dentin complex (cellularity, vascularity, and tissue) within an existing tooth. Ref: Ingle's Endodontics textbook

36. B — Regenerative endodontic procedure or apexification, based on case factors. Ref: Ingle's Endodontics textbook

37. B. Remaining Dentin Thickness; an RDT of 0.5 mm or less significantly increases pulp inflammation risk. Ref: Essentials of Preclinical Conservative Dentistry textbook

38. A — Residual microorganisms in complex anatomy. Ref: Grossman's Endodontics Practice textbook

39. B — Second mesiobuccal canal. Ref: Ingle's Endodontics textbook

40. B — Two canals that may merge or remain separate. Ref: Ingle's Endodontics textbook

41. B- 5-point ordinal radiographic scoring system. Ref: Endodontic radiology textbook

42. B — Mandibular second molars. Ref: Ingle's Endodontics textbook

43. B. Manage apical disease when orthograde treatment is inadequate or impractical. Ref: Ingle's Endodontics textbook

44. C. Working length determination. Ref. Grossman's Endodontics Practice textbook

45. B — Vital pulp therapy in selected cases or root canal treatment based on diagnosis and clinical judgement. Ref: Ingle's Endodontics textbook

46. B — Generally not indicated; local operative management and analgesia are prioritised. Ref: Cohen's Pathways of the Pulp textbook

47. C. Increase in lesions of dental caries. Ref: Essentials of Preclinical Conservative Dentistry textbook

48. B. Zinc oxide-eugenol Ref: Essentials of Preclinical Conservative Dentistry

49. A — C-factor and material/curing variables. Ref.: Sturdevant's art and science of Operative Dentistry textbook

50. B — Bonded to unbonded surfaces. Ref.: Sturdevant's art and science of Operative Dentistry textbook

51. A — A superficial layer with unreacted monomers that can aid interlayer bonding. Ref.: Sturdevant's art and science of Operative Dentistry textbook

52. C- EC Chisolm. Ref: Philip's science of dental materials textbook.

53. A — Occluding dentinal tubules. Ref.: Sturdevant's art and science of Operative Dentistry textbook

54. C- Both the above Ref.: Sturdevant's art and science of Operative Dentistry

55. D- Hydrochloric acid Ref.: Sturdevant's art and science of Operative Dentistry

56. A — A resin polymerisable component. Ref: Philip's science of dental materials textbook.

57. C- Photo (light) activation. Ref.: Sturdevant's art and science of Operative Dentistry

58. C- Modified zinc oxide-eugenol cement. Ref: Philip's science of dental materials textbook.

59. C- Middle mesial canal in Mandibular first molar. Ref: Ingle's Endodontics textbook

60. B — Enhancing remineralisation and reducing demineralisation, with effects on bacterial metabolism. Ref.: Sturdevant's art and science of Operative Dentistry

61. A. Gate control theory. Ref: Ingle's Endodontics textbook

62. A. Calcium silicate hydration → calcium silicate hydrate gel and calcium hydroxide formation Ref: Bioceramic materials in clinical endodontics textbook

63. A. Smaller voxel dimensions improve the ability to resolve fine anatomical structures, subject to contrast and segmentation limitations. Ref: Micro CT in Medicine and Engineering textbook

64. B — Identify the likely source tooth radiographically. Ref: Ingle's Endodontics textbook

65. A — Bite test, transillumination, magnification and periodontal probing. Ref: Ingle's Endodontics textbook

66. B -Standardize irrigant concentration, volume, temperature, activation time and needle/cannula placement, with appropriate randomisation and blinded outcome assessment. Ref: Ingle's Endodontics textbook

67. B — Randomised controlled trial. Ref : Essentials of Public health dentistry textbook

68. B — Multipotency, clonogenic potential and capacity for odontogenic differentiation. Ref: Ingle's Endodontics textbook

69. B-Cell-density-dependent regulation of gene expression through signalling molecules. Ref: Cohen's Pathways of the Pulp textbook

70. B — Metabolic activity of viable cells. Ref: Cohen's Pathways of the Pulp textbook

71. B. Clastic cells expressing osteoclast-associated markers. Ref: Cohen's Pathways of the Pulp textbook

72. C- X-ray diffraction (XRD). Ref: Cohen's Pathways of the Pulp textbook

73. B — Optimise exposure to achieve diagnostic information with appropriately low dose. Ref: Cohen's Pathways of the Pulp textbook

74. B — Voluntary informed consent after adequate information. Ref : Essentials of Public health dentistry textbook

75. B. Fluid movement within dentinal tubules stimulating pulpal sensory nerve endings. Ref: Orban's oral histology and embryology textbook