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(50) الامتحان درجة - الفترة - والاسنان الفم وجراحة طب كلية - الكل - قسم- الاول المستوى - Dental Materials Exam 2025

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1) Which material offers the most natural translucency in ceramic restorations?
   1) - In-Ceram Alumina
   2) + In-Ceram Spinell
   3) - Zirconia
   4) - Alumina
2) Which of the following is the primary component of dental adhesives?
   1) - Sodium chloride
   2) + Bis-GMA
   3) - Hydroxyapatite
   4) - Methyl methacrylate
3) …….. results from two sets of forces directed toward each other in the same straight line
   1) - Tension.
   2) + Compression.
   3) - Torsion
   4) - Shear
4) Why is GIC best restorative material in children?
   1) - Good marginal integrity.
   2) - It has less occlusal wear.
   3) - High strength.
   4) + It can bond to both enamel and dentin.
5) …… is the resistance of a material to per moment deformation. It indicates the amount of energy necessary to deform the material to the proportional limit.
   1) + Resilience.
   2) - Brittleness.
   3) - Hardness
   4) - Stiffness
6) Which of the following statements are not correct?
   1) + Thermal diffusivity is the ability of a material to conduct heat
   2) - Wear is abrasion (with or without a chemical) of a substance
   3) - Creep is the slow dimensional change under load
   4) - Stress is the internal force per unit cross-sectional area acting on a material.
7) Compressive stress is computed by dividing the external force by the:
   1) + Area of the test specimen upon which the weight rests.
   2) - Elasticity of the test specimen in strain.
   3) - Length of the test specimen beneath the force.
   4) - Strain of the test specimen per unit length.
8) The property that measures the expansion of a material per unit length for every degree of temperature change is called the.
   1) - Thermal Conductivity
   2) - Elongation of a body
   3) + Linear coefficient of thermal expansion
   4) - Thermal Diffusivity
9) About the solubility and sorption of materials, which of the following statements is incorrect?
   1) - Absorption refers to the uptake of liquid by the bulk solid
   2) - The sorption mean adsorption plus absorption.

3) - Adsorption indicates concentration of molecules at the surface of a solid or liquid.
4) + No one.

10) The application of an external force to a body results in a change in dimension of that body this mean:
1) - Stress.
2) + Strain
3) - Force.
4) - Stress curve.

11) The definition of …….. is ‘physicochemical interaction between a metal or an alloy and its environment that results in a partial or total destruction of the material or in a change of its properties’.
1) - Tarnish.
2) - Erosion.
3) + Corrosion
4) - Galvanism.

12) The opposite of toughness is
1) - Resilience.
2) + Brittleness.
3) - Hardness.
4) - Stiffness

13) The Knoop hardness number which one of the following materials is closest to that of dentin (KHN 65)?
1) - Tooth enamel.
2) - Pure Gold.
3) + Silicate cement.
4) - Porcelain.

14) The type of stress to which dental amalgam is most resistant is:
1) - Tensile stress.
2) - Shear stress.
3) + Compressive stress.
4) - Impact stress.

15) …… may be defined as the energy absorbed by a material in undergoing elastic deformation up to the elastic limit.
1) - Toughness.
2) - Modulus of elasticity.
3) + Resilience.
4) - Ductility.

16) The flexural strength of a material is its ability to …. before it breaks.
1) + Bend, Flex or Twist.
2) - Bend or Flex.
3) - Flex or Twist.
4) - Bend or Twist

17) Modulus of elasticity means:
1) - Ability to be stretched with permanent deformation.
2) - Ductility of a material.
3) + Rigidity or stiffness of the material.
4) - Malleability of a material.

18) The point at which stress of material exhibits a specific limited deviation P is called:
1) - Proportional limit.
2) - Tensile strength
3) - Ultimate strength.
4) + Yield strength

19) Which of the following types of dental adhesive systems involves self-etching primers?
1) - Total etch system
2) + Two-step self-etch system
3) - Light-cured resin system
4) - Glass ionomer system

20) What is the primary disadvantage of using the total-etch bonding system?
1) - It requires a longer setting time
2) + It can cause postoperative sensitivity
3) - It requires multiple visits
4) - It is less effective on enamel

21) Which elastomeric material is known for its excellent dimensional stability and high accuracy?
1) - Polysulfide
2) - Condensation silicone
3) + Addition silicone.
4) - Alginate

22) From the low to the high value of coefficients of thermal expansion, Rank the following materials:
1) - Enamel, Dentin, Porcelain, Amalgam, Composite, and Denture acrylic resin
2) - Dentin, Enamel, Amalgam, Porcelain, Composite, and Denture acrylic resin
3) + Porcelain, Dentin, Enamel, Amalgam, Composite, and Denture acrylic resin.
4) - Amalgam, Enamel, Dentin, Porcelain, Composite, and Denture acrylic resin.

23) What type of bonding does glass ionomer cement exhibit with tooth structure?
1) - Mechanical bonding only
2) - Chemical bonding only
3) + Both chemical and mechanical bonding
4) - No one.

24) All the following are advantages of nano calcium hydroxide particles compared to traditional hydroxide Except?
1) + Decreased cytotoxicity.
2) - Deeper penetration in dentinal tubules.
3) - Increase antibacterial activity.
4) - Increased surface area contacts with pathogens.

25) Which of the following implant designs is most commonly used?
1) - Cylindrical.
2) + Screw root form.
3) - Blade.
4) - Cylindrical and Screw root form.

26) Which of the following has antimicrobial activity?
1) - EDTA.
2) - Sodium hypochlorite.
3) - MTAD.
4) + Sodium hypochlorite and MTAD.

27) Which material offers the most natural translucency in ceramic restorations?
1) - In-Ceram Alumina
2) + In-Ceram Spinell
3) - Zirconia
4) - Alumina

28) What property makes zinc phosphate cement suitable for use as a luting agent?
1) - High fluoride release
2) - Antibacterial action

3) - Flexibility.
4) + No one

29) What is the primary goal of using intracanal medications in dental treatment?
1) + Disinfect the root canal system.
2) - Reduce pain.
3) - Increase tooth strength.
4) - Reduce inflammation and reduce pain.

30) The main component of the powder in zinc phosphate cement is:
1) + Zinc oxide.
2) - Silica
3) - Magnesium oxide.
4) - Zinc oxide and Silica.

31) Creep is highest in:
1) - High copper amalgam.
2) - Zinc free amalgam.
3) + Low copper amalgam.
4) - Zinc containing amalgam

32) What is the primary purpose of surfactants added to some PVS materials?
1) - To increase viscosity
2) - To enhance flow
3) + To improve wettability
4) - To increase working time

33) Which phase in low copper dental amalgam is most susceptible corrosion?
1) - Y (Ag3Sn).
2) - Y1 (Ag2Hg3).
3) + Y2 (Sn8H)
4) - No one.

34) Which elastomeric material has the highest tear strength?
1) - Polyether
2) + Polysulfide
3) - Condensation silicone
4) - Addition silicone

35) What is the setting reaction of polyvinyl siloxane (PVS) based on?
1) - Hydrocolloid reaction.
2) - Condensation polymerization
3) + Addition polymerization.
4) - Thermal reaction

36) Which of the following is an advantage of Pressed Lithium Disilicate (e.g., IPS e.max Press)?
1) - Allows for rapid fabrication with high precision
2) + Provides superior marginal fit and enhanced mechanical properties
3) - Reduces chair time significantly
4) - Consistent quality with minimized human error

37) Which factor does not reduce creep in dental amalgam?
1) - Avoiding Y2 phase formation.
2) - Using high copper alloys.
3) - Proper condensation techniques.
4) + Increasing mercury content during mixing.

38) Which impression material is most affected by moisture?
1) - Polyether.

2) + Alginate
3) - Silicone.
4) - Plaster

39) Which impression material is known for its ability to be poured multiple times without distortion?
1) - Polysulfide
2) + Polyvinyl siloxane
3) - Alginate
4) - Impression compound

40) What is the primary disadvantage of polyether impression material?
1) - Poor accuracy
2) - Poor dimensional stability
3) + High stiffness after setting
4) - Short working time

41) We can improve the dimensional accuracy of impression material by:
1) - Using hydrophilic or hydro-active material
2) - Proper moisture control especially in case of hydrophobic material
3) - Using low viscosity material with minimum and uniform thickness.
4) + All are true.

42) An amalgam has a force of 111 N applied over a contact area of 6.45 mm2, which of the following is the stress applied to the amalgam?
1) - 1720 MPa
2) - 172 MPa
3) - 1.72 MPa
4) + 17.2 MPa

43) The most ductile and malleable metal is:
1) - Copper
2) - Silver.
3) + Gold.
4) - Platinum.

44) What abrasive is used in air-particle abrasion for surface preparation?
1) - Zinc oxide
2) + Aluminum oxide
3) - Diamond powder
4) - Calcium carbonate

45) The main difference between dental stone and dental plaster is:
1) - Chemical composition.
2) - Shelf life.
3) + Shape and size of particles.
4) - Solubility in water.

46) What is the main advantage of using calcium hydroxide as an intracanal medicament in primary teeth?
1) - Good sealing ability
2) - Anti-inflammatory properties
3) + Antibacterial effect.
4) - All are true

47) Which of the following is considered a bioactive material?
1) - Stainless Steel.
2) + Hydroxyapatite.
3) - Co-Cr alloy.
4) - Gold.

48) …….. is the ability of material to resist abrasion
1) + Hardness
2) - Abrasion
3) - Cutting
4) - Stress

49) Which method is used to form abrasive instruments without melting the material?
1) - Vitreous bonding
2) - Rubber bonding
3) + Sintering
4) - Resinoid bonding

50) What determines whether silica forms a crystalline or amorphous structure upon solidification?
1) - The amount of silica present
2) - The presence of metal ions
3) + The rate of cooling during solidification
4) - The temperature of the firing oven

51) Which type of dental composite is specifically designed for anterior teeth due to its superior aesthetic qualities?
1) + Micro-fill composites
2) - Macro-fill composites
3) - Hybrid composites
4) - Packable composites

52) What is the role of fluxes in ceramic materials?
1) - They increase the strength of the ceramic matrix.
2) + They break the Si–O–Si bonds, reducing the structural integrity of the glass or ceramic matrix.
3) - They improve the transparency of ceramics.
4) - They enhance the crystalline structure of the ceramic.

53) _____is the form of hydroxyapatite in which fluoride ions have replaced some of the hydroxyl ions.
1) - Hydroxyapatite.
2) - Chlorapatite
3) - Carbonate-Apatite.
4) + Fluorapatite

54) Disadvantages of SDF stains carious tooth structure _____.
1) - Blue
2) - Yellow
3) + Black
4) - Green

55) What is the primary purpose of abrasives in polishing applications?
1) - To apply color
2) - To increase shine
3) - To provide texture
4) + To remove material

56) Which of the following polishing material extremely fine used for polishing teeth and restoration inside the mouth?
1) - Pumice
2) + tin oxide
3) - Garnet
4) - Both pumice and tin oxide

57) What is the most effective abrasive for dental use?
1) + Diamond dust

2) - Carbide
3) - Aluminum oxide
4) - All are true.

58) Which of the following cements needs a larger area of the slab to reduce the exothermic reaction?
1) - Calcium hydroxide cement.
2) - Polycarboxylate cement.
3) + Zinc phosphate cement.
4) - Glass ionomer cement

59) Which one of the elements in dental amalgam in primarily responsible for tarnish?
1) - Silver.
2) - Tin.
3) - Zinc.
4) + Mercury

60) Why is silica ($SiO_2$) considered brittle in both its crystalline and amorphous forms?
1) - Because it contains water molecules.
2) + Due to its ionic nature
3) - Because it's metallic in structure
4) - Due to its high thermal conductivity

61) Fillers are added to composite resin to increase:
1) - Working time.
2) - Hydrophilic properties.
3) - Matrix deformation.
4) + Wear resistance.

62) What is the primary purpose of "dressing" an abrasive instrument?
1) - To polish enamel
2) - To sterilize the instrument
3) + To restore grinding efficiency by removing debris
4) - To enhance bonding strength

63) Sixth-generation dentin bonding agents are characterized by:
1) - Three-step application process
2) + Self-etching primers (no rinse)
3) - Use of eugenol-based primers
4) - Exclusion of adhesives

64) What is the main difference between crystalline and amorphous structures?
1) + Crystalline has a regular atomic pattern; amorphous is random.
2) - Both have random atom arrangements.
3) - Amorphous is more organized than crystalline.
4) - Crystalline exists only in liquids.

65) Which method is used to prevent premature polymerization?
1) - Using light-cured resin only
2) - Adding optical modifiers
3) + Using inhibitors like BHT and oxygen
4) - Applying less filler content

66) What property of ceramics can damage opposing dentition?
1) - Low thermal conductivity
2) - High polish-ability
3) + High surface roughness
4) - Low thermal conductivity and high surface roughness.

67) What distinguishes dual-cured resins from other curing methods?

1) + They can cure via both chemical and light activation
2) - They only cure under light
3) - They use heat instead of light
4) - They don’t require any curing agents

68) The "over-waiting phenomenon" occurs due to:
1) - Excessive solvent evaporation
2) - Insufficient etching time
3) + Residual water diluting the primer
4) - Over-polymerization of resin.

69) Which method is used to remove the smear layer?
1) - Mechanical instrumentation.
2) - Sodium hypochlorite.
3) - Chlorhexidine.
4) + Sodium hypochlorite and Chlorhexidine.

70) Which surface method involves adding materials to the implant surface?
1) - Subtractive.
2) + Additive.
3) - Polishing.
4) - Vaporization.