

UNIVERSITY OF BOLTON

FACULTY OF HEALTH AND WELLBEING

(BARNET AND SOUTHGATE COLLEGE)

FdSc DENTAL TECHNOLOGY

SEMESTER TWO EXAMINATION 2018/2019

INTRODUCTORY DENTAL BIOMATERIALS SCIENCE

MODULE NO: DNT4005

Date: Thursday 16 May 2019

Time: 2.00 pm – 3.30 pm

INSTRUCTIONS TO CANDIDATES:

There are 50 questions on this paper.

Answer ALL questions.

Each question is worth 1 mark.

Please use the answer booklet provided. Do not write your answers on the examination paper.

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1. Which of the following is not an 'ideal' requirement of a dental biomaterial?
 - a. Dimensionally stable.
 - b. Aesthetic
 - c. Ductile
 - d. Low temperature range

2. Which metal is considered to have the highest hardness from the list below?
 - a. Pt
 - b. Cu
 - c. Au
 - d. Co

3. Which of the following alloys is most suited to the oral environment?
 - a. Stainless Steel
 - b. Cobalt Chromium
 - c. Titanium
 - d. Silver palladium

4. Which of the following would have the least impact on a dental material used in the oral cavity?
 - a. Acid
 - b. Expansion
 - c. Temperature changes
 - d. Oral fluids

5. Which of the following has the highest strength value as a biomaterial?
 - a. Lithium Disilicate
 - b. Composite
 - c. Gypsum
 - d. Zirconia Oxide

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6. Which of the following statements relates to the term glass transition?
- A material with high translucency
 - Colour stable
 - A temperature at which a material can be moulded
 - Grain structure
7. Which of the following materials is least biocompatible?
- Lithium Disilicate
 - Poly Ethyl Ethyl Ketone
 - Nickel Chromium
 - Zirconia Oxide
8. Which statement does not relate to an acrylic denture being selected in preference to a chrome denture?
- Lower cost
 - Easier to construct
 - Quicker to make
 - Thinner in cross section
9. Which of the following is a main benefit of using CAD/CAM techniques?
- Manufacturing consistency.
 - Cheaper materials.
 - Inaccuracy in comparison to traditional techniques.
10. Which material would be chemically least affected by the oral environment?
- Poly methyl methacrylate
 - Zirconium Dioxide
 - Cobalt Chrome
 - Precious gold

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11. When selecting a denture base alloy what in your opinion would be the most important property?
- Corrosion resistance
 - Colour
 - Glass transition point
 - Strength
12. When soldering orthodontic stainless-steel wire what should you avoid?
- Over heating the metal.
 - Close metal profiles.
 - Using a compatible solder.
 - Using flux
13. Why is molybdenum used in non-precious alloys?
- Bonding mechanism
 - Biocompatibility
 - Grain refiner
 - Corrosion resistance
14. Kaolin is used in ceramics for?
- Strength
 - The formation of a glass matrix
 - Its opaque properties
 - Elongation
15. Which of the following metal alloys does not chemically bond with ceramics?
- 51% Gold Alloys
 - Nickel chrome
 - Stainless steel
 - Cobalt chromium

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16. Base metal alloys may contain elements that are toxic or known to cause allergic reactions in some patients, which of the following is known to cause irritation?
- Gold
 - Chromium.
 - Cobalt
 - Nickel
17. For an implant alloy what would be the least important consideration?
- Ductility
 - Strength
 - Biocompatibility
 - Cost
18. Benzoyl Peroxide is present in heat cure denture base resin as a:
- Pigment
 - Activator
 - Inhibitor
 - Initiator
19. Which type of porosity could be caused by inaccurate mixing ratios of acrylic resins during initial stages of polymerisation?
- Gaseous porosity
 - Contraction porosity
 - Granular porosity
 - Expansion porosity
20. Cobalt is used in alloys to produce high levels of strength:
- True
 - False

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21. Stainless steel wires used in orthodontics are made from:
- a. 21/11 austenitic stainless steel
 - b. 18/8 austenitic stainless steel
 - c. 18/16 austenitic stainless steel
 - d. 19/8 austenitic stainless steel
22. Which of the following materials are least likely to be milled by CAD CAM technology?
- a. Composite
 - b. Acetal
 - c. Zirconium
 - d. Gold Alloys
23. A metallic clasp that is incorrectly placed in an undercut will eventually permanently deform because:
- a. The elastic limit has been exceeded
 - b. There is insufficient elasticity in the alloy
 - c. There is excessive flexibility in the alloy
 - d. The elastic limit has been unattained
24. Implant surfaces are designed to encourage osseo-integration by:
- a. Encouraging bacterial colonies
 - b. Smooth surface topography
 - c. Surface treatments including acid etching, abrading and plasma
 - d. Cement bonding

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25. The materials used to fabricate a milled CAD CAM implant substructure are advantageous over those materials used in the lost wax process because:
- Proper manipulation of the milling material can produce a passive fit
 - Problems of distortion encountered when using dental waxes are removed
 - Potential casting problems inherent when casting dental alloys are removed
 - All of the above
26. The following custom made device should be acid etched before leaving the dental laboratory:
- Porcelain veneers
 - Gold shell crowns
 - Full Dentures
 - Polyether Ether Ketone
27. What is the ideal surface finish for metal based restorations?
- Rubber matt finish
 - Full metal restorations cannot be highly polished
 - Highly polished
 - Air abraded.
28. The surface of an alloy used to fuse with porcelain is prepared to increase:
- Micro mechanical retention
 - Non chemical attraction between materials.
 - Sharp, angled surfaces
 - Translucency.

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29. The two main types of soft lining material are?
- Silicone based.
 - Aluminium based.
 - Poly methyl methacrylate based.
 - Composite based.
30. Stainless steel wires when bent a number of times, break through the grain boundaries within the metal:
- True
 - False
31. As a metal cools it changes state from a liquid to a solid this is initiated by:
- Formation of stable nucleus.
 - Grains.
 - Inhibitor.
 - Metallic grains forming until the metal is at room temperature.
32. Which of the following types of gold alloy is the least brittle?
- 1
 - 2
 - 3
 - 4
33. Composite materials are most commonly cured under:
- Blue light
 - White light
 - Ultraviolet light
 - All of the above.

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34. Why is cobalt chromium used for partial denture fabrication?
- a. Softer and more malleable than acrylic
 - b. Insulates the soft tissue
 - c. Can be cast in thin cross sections
 - d. Easily formed around teeth
35. Ductile materials are classified from an elongation percentage of more than:
- a. 2%
 - b. 3%
 - c. 5%
 - d. 7%
36. Ceramic materials have high compressive strength:
- a. True
 - b. False
37. Cold cure resins are weaker than heat cure resins by approximately:
- a. 10%
 - b. 20%
 - c. 30%
 - d. 40%
38. Platinum is used in an alloy to reduce the melting range?
- a. True
 - b. False

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39. Galvanism occurs in the mouth when:
- Similar metals are in contact with each other
 - Patient has a dry mouth
 - Dissimilar metals are in contact in the presence of an electrolyte
 - Dissimilar metals are in contact
40. Dental alloys have melting ranges?
- True
 - False
41. Aesthetic layering ceramic materials are made up of?
- Gypsum, Kaolin and Zirconia
 - Feldspar, Quartz, Kaolin
 - Ceramic and Acrylic Resins
 - Metal Alloy, Kaolin, and Amalgam
42. Glaze is used on porcelain surfaces of crowns to:
- Close the porosity associated with dental ceramics
 - To reduce attrition of opposing dentition.
 - Reduce uptake of oral fluids.
 - All of the above
43. Surfaces of materials appear dull because:
- reflected light is directed directly back to the source
 - reflected light is directed away from the source

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44. When the patient presents deep undercuts, clasps used for retention should ideally be constructed using:
- a. cast gold alloy
 - b. wrought wire
 - c. cobalt chromium
 - d. ceramics
45. High performance polymers PEEK and PEKK possess flexural strength properties that match natural bone properties:
- a. True
 - b. False
46. Which of the following alloys has the potential to release the most ions into the oral environment when in contact with a different metal?
- a. Cobalt Chromium
 - b. Low gold content alloys
 - c. Silver palladium alloys
 - d. High gold metal alloys
47. Which of the following materials has the least compressive strength?
- a. Acrylic Resin
 - b. Lithium Disilicate
 - c. Composite
 - d. Feldspathic Porcelain
48. Heat cure acrylics retain more residual monomer than cold cure resins?
- a. True
 - b. False

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49. Density is an important property when centrifugal casting metals because?
- a. It makes the cast cleaner.
 - b. The investment is easier to deinvest.
 - c. Grain structure of the alloy is organised.
 - d. It makes the metal easier to cast.
50. What is the average temperature rise caused by an exothermic reaction in acrylic during the initial stages of polymerisation?
- a. 10°C
 - b. 20°C
 - c. 30°C
 - d. 40°C

END OF QUESTIONS

PAST EXAMINATION PAPER